

THE JOURNAL

OF THE

Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

Vol. XXVI

FEBRUARY, 1927

No. 2

ORIGINAL ARTICLES

ACUTE PANCREATITIS*

IRVIN ABELL, M. D.

LOUISVILLE, KY.

In a series of more than 300 operations on the biliary tract the writer has encountered 10 cases of acute pancreatitis. All but one occurred in the course of more or less prolonged cholecystitis, presenting varying degrees of gall bladder pathology. The term "acute pancreatitis," as here employed, covers at least three distinct conditions, acute pancreatic necrosis, acute hemorrhagic pancreatitis, and pancreatic abscess. It is believed that the latter is but an advanced stage of the first two, the patient surviving the acute onset with subsequent infection and suppuration of damaged pancreatic tissue and hemorrhagic deposit resulting in abscess formation. Of the 10 cases, five occurred in men and five in women: five were markedly obese, one moderately so, three were of muscular development, and one quite emaciated. The average age of the patients was 39.7 years; the individual ages being 17, 32, 34, 39, 50, 51, 51, 54, 56 and 64.

PREVIOUS HISTORY

Four of the 10 patients had had typhoid fever and all but one gave a definite history of gall bladder disease. Duration of symptoms referable to gall bladder: two cases one year, two cases two years, one case three years, one case six years, one case eight years, one case 10 years, and one case 20 years; average five years, ten months. Seven gave a history of gall bladder colics, while in the remaining three the colic that occurred with the onset of the pancreatitis was the initial one.

All had suffered digestive disturbances for varying periods of time. One had undergone an operation for removal of stones and drainage of gall bladder six years before coming under my care, at which time he presented a second crop of calculi in his gall bladder with an acute hemorrhagic pancreatitis.

SYMPTOMS REFERABLE TO ACUTE INVOLVEMENT OF PANCREAS

Duration—Two cases two days, three cases three days, one case four days, two cases five days, one case seven days, and one case ten days. In seven, the symptoms attracting attention to the pancreas, developed at periods varying from one to four weeks following a gall bladder colic, there being a subsidence of pain and other subjective symptoms referable to the gall bladder before onset of those referable to pancreas or else a continuation of gall bladder symptoms with those of pancreas gaining in intensity and consequent ascendancy. In three, the pain accompanying the onset of the pancreatitis was the initial one the previous symptoms being of reflex digestive character of mild degree.

Pain—The pain in seven was acute, severe and agonizing, accompanied by incessant nausea and vomiting, representing the ultra acute type; in three it was much less severe, the cases pursuing a milder course. In five it was referred to the epigastrium and right subcostal region, being described as similar to that experienced with previous attacks of gall bladder

*Read at Annual Meeting, September, 1926.

colic; in two it was felt in the right subcostal region, extending across the upper abdomen to the left subcostal area; in three the maximum intensity was noted in the left subcostal area. Cyanosis was observed in but two. The pulse in three was under 100, 88, 90 and 96; in seven over 100, 110, 115, two 120, 138, and two 140. Temperature varied from 99.5 to 102. Systolic blood pressure from 100 to 154. Considering the pathology found at operation, the leucocyte counts were not high, 5300, 6800, 9800, 11800, 12000, 12700, 13300, 14800, 15300, 18800. Such blood findings are in harmony with the belief that the extensive destruction of pancreatic tissue is due to an activation of the trypsinogen within the pancreas rather than to actual bacterial attack.

Urine—The urine in all cases showed presence of albumin; none showed the presence of sugar. Bile was present in five, casts in four, microscopic blood in seven and microscopic pus in nine.

Mass—In five patients no mass was detected, while in the remaining five an enlargement was distinctly palpable: in three the mass was felt in the right hypochondrium, in one in the left hypochondrium, and in one it extended transversely across the abdomen.

Pre-Operative Diagnosis—The diagnosis in five was acute cholecystitis; in one of these the detection of a mass at the site of the pancreas after the patient was anesthetized led to a correct diagnosis before the incision was made. In one the condition was thought to be acute intestinal obstruction, in three a correct diagnosis of acute pancreatitis was made, while in one no diagnosis other than acute abdomen was made.

Morbid Anatomy—Free fluid was found in the greater peritoneal cavity in three cases, in one of which it was bile tinged and of large quantity; hemorrhagic fluid exudate was present in the lesser peritoneal cavity in seven instances, varying in amount from a few to 2600 c.c.

Rather widely disseminated areas of fat necrosis were encountered in four and none detected in six cases. The gall bladders were visibly diseased in all ten cases, and nine contained calculi; the common ducts of all, upon palpation, were negative for stones.

In three cases the pancreatic lesion presented as a hemorrhagic pancreatitis, in two the hemorrhagic infiltration being confined to the pancreas and tissues immediately adjacent; in one, of moderate size, in the other of such extent as to form an

oblong mass across the abdomen which was palpable through a rather thick wall; in the third the infiltration involved not only the pancreas, but extended into the subhepatic and right perirenal spaces and into and behind the ascending mesocolon as far as the cecum. In one case the pancreas was enlarged to approximately four times the normal size, nodular and elastic, biletinged fluid in lesser and greater cavities, thickening and edema of gastrohepatic omentum and pancreatic fatty capsule, all of which bled on manipulation, although no visible hemorrhagic deposit was present.

Two presented a moderate increase in size of head and right half of body with marked enlargement of left half of body and tail, the mass involving the gastric surface of spleen, the lesser peritoneal cavity and the transverse mesocolon; no visible hemorrhagic deposit present.

In two the head of the pancreas was markedly enlarged and in one at operation was thought to be a subacute pancreatitis accompanying an acute cholecystitis: the patient died nine days after operation and autopsy revealed acute pancreatic necrosis involving the head and part of the body of pancreas.

In one, the lesion presented as a retroperitoneal pancreatic abscess holding six ounces of pus in which were flocculi, caseous masses and bits of sloughing pancreatic tissue. Cultures from pus showed colon bacillus.

In one, the condition presented as a pseudocyst of the lesser peritoneal cavity, 2600 c.c. of hemorrhagic fluid, sterile upon culture, being removed: the layer of peritoneum forming the posterior wall of the lesser cavity immediately over the pancreas had disappeared, the partly necrotic pancreas being exposed to view upon removal of fluid.

OPERATIONS

In eight cases a drainage of the pancreas was employed, the route of approach being through the gastrocolic omentum in four and the gastrohepatic omentum in four: in six of the eight, cholecystostomy with removal of calculi was done, in one cholecystectomy was done, in one the condition of patient was so precarious that the gall bladder pathology was not disturbed. Of the two in which pancreatostomy was not employed, in one, the pancreatic inflammation involved the left half of the body and the tail of the pancreas without apparent necrosis and a removal of calculi and cholecystostomy was relied upon to give drainage: in the other, the pancreatic

pathology was thought to be a subacute inflammation complicating cholecystitis: a cholecystectomy with common duct drainage was done followed by death, autopsy showing acute pancreatic necrosis.

SYNOPSIS CASE HISTORIES

Case 1. No. 5237 * 2-23-1917—Male, age 32. History of gall bladder colics. Duration of present illness three days. Pain, nausea, vomiting, tenderness in the right upper quadrant, jaundice present, bile, albumin, casts and pus in urine. White cell count 5300, P. M. N. 64.7, small lymphocytes 23.3, large lymphocytes 11.5. Tentative diagnosis—Cholecystitis. Operation: head of pancreas shows marked enlargement; removal of large distended gall bladder containing calculi; drainage of common duct through cystic duct. Post-operative history: No bile from drainage tube; bleeding from bowel, stomach, gums and drainage tube; severe epigastric pain, collapse and death on ninth day after operation. Autopsy: Acute pancreatic necrosis. Pathological report: Chronic cholecystitis, acute and chronic pancreatitis.

Case 2. No. 10,097 * 3-16-1921—Male, age 51. Operation for gall stones six years ago. History of colics before and since operation. Last colic seven days ago, since when has been confined to bed. Pain in epigastrium radiating to gall bladder area and to right renal area. Temperature 98.2, pulse 90. Slight jaundice. Rigidity and tenderness in right upper quadrant, most marked tenderness in right renal area. Urine contains bile, albumin, casts, microscopic blood and pus. White cell count 6800. Tentative diagnosis: Cholecystitis with recurrent calculi. Operation: Adherent mass consisting of gall bladder, duodenum, pylorus, colon and omentum. Upon separation, hemorrhagic infiltration with areas of necrosis in pancreas, subhepatic and right renal spaces, and ascending mesocolon as far as cecum, gall bladder containing calculi removed and common duct drained through cystic duct. Gastrohepatic omentum opened and pancreas drained with gauze cigarette; cigarette drains placed in subhepatic and right renal spaces. Recovery.

Case 3. No. 13119 * 11-8-1922—Female, age 39. History digestive disturbance; no colics. Acute onset 48 hours ago; pain, nausea, vomiting, constipation, slight cyanosis. Pulse 120, temperature 102. Leucocytes 15,300. P.M.N. 86.5 per cent. Abdomen shows slight mass in left upper quadrant. Urine shows albumin, casts, microscopic blood and pus. Tentative diagnosis: Intestinal obstruction. Operation: Acute hemorrhagic pancreatitis; pancreastostomy through gastrohepatic omentum; cholecystostomy with removal of stones. Recovery.

Case 4. No. 14,099 * 10-15-1923—Male, age 52. History of gall bladder colics and reflex digestive disturbance. Has had recurrent attacks of iridocyclitis for years. Last colic four weeks ago. Since onset of last or present illness has had continual pain in right upper quadrant. For past week has had fever, 101-102°. Tender mass in right upper quadrant. Leucocyte count 12,800, P.M.N. 78 per cent. Urine shows albumin and microscopic pus. Tentative diagnosis: Cholecystitis. Operation: Gall bladder contains stones and is not adherent to mass. Cholecystostomy with removal of calculi. Mass corresponds to pancreas, and overlying omentum shows multiple

areas of fat necrosis. Mass approached through gastrocolic omentum and is found projecting into lesser peritoneal cavity. Opened and evacuated of six ounces of pus showing colon bacillus on culture; necrotic putty-like masses of pancreatic tissue removed from abscess cavity; drainage. Recovery.

Case 5. No. 15,678 * 3-31-1924—Female, age 34. Colics and digestive disturbance for more than one year, marked and associated with vomiting at intervals for past year. At times vomitus has contained blood. Has been bedfast for past six months. Weight one year ago 173, present 100. In October, 1923, first noted swelling or mass in upper abdomen which at times has disappeared; has been constantly present for past month. Pulse 138, temperature 100. Fluctuating mass occupying upper abdomen between the costal margins, extending from ensiform to point below umbilicus, most marked to left of midline. Blood shows hemoglobin 68, red blood cells 3,170,000, leucocytes 13,300. Urine shows albumin, microscopic blood and pus. Tentative diagnosis: Cholecystitis, pancreatitis with pseudocyst of lesser peritoneal cavity. Operation: Local anesthesia; lesser peritoneal cavity opened above stomach and evacuated of 2600 c.c. of hemorrhagic fluid sterile on culture. Pancreas shows necrosis of surface exposed in sac. Gall bladder contains multiple calculi and is not disturbed. Edges of incision in lesser cavity are sewn to parietal peritoneum and lesser cavity drained with tube. Recovery.

Case 6. No. 16,360 * 9-1-1924—Female, age 50. Digestive discomfort, epigastric pain and colics for three years. For past six weeks has noted increase in pain which has been practically continuous with evening temperature of 100 to 101. Abdomen has increased in size. While in hospital for further study was seized with acute pain, nausea, vomiting, and fever rose to 102; pulse 140. Abdomen shows the presence of fluid, is tender and rigid over gall bladder, extending to left midline. Leucocyte count, on entering hospital, 11,800, after onset of acute attack 18,100; P.M.N. 82.5 per cent. Urine shows albumin, microscopic pus and blood. Tentative diagnosis: Cholecystitis, acute pancreatitis. Operation: Bile tinged, free fluid in greater cavity. Gall bladder is thick walled, edematous and contains stones. Cholecystostomy with removal of stones. Pancreas is greatly enlarged, nodular and soft in consistency; adjacent tissue is edematous, hyperaemic and bleeds on slightest manipulation. Gastrocolic omentum opened and drains placed down to head of pancreas. Recovery.

Case 7. No. 16,713 * 11-3-1924—Male, age 64. History of gall bladder colics and digestive disturbance over a period of 20 years. Mild colics three weeks ago. Present acute illness began with severe colic six days ago; pain has necessitated opiates continually since. Nausea and vomiting marked. Abdomen exquisitely tender in epigastrium and under right costal margin. Pulse 108, temperature 100. Leucocytes 9800. Urine shows albumin, microscopic pus and blood. Tentative diagnosis: Cholecystitis. When under the anesthetic a mass could be felt, extending across abdomen, corresponding to site of pancreas; added diagnosis of acute pancreatitis made. Operation: General peritoneal cavity contains free clear fluid. Lesser peritoneal cavity opened through gastrocolic omentum contains hemorrhagic fluid, multiple areas of fat necrosis in omentum and mesocolon. Pancreas is imbedded in hemorrhagic exudate and presents multiple

areas of necrosis. Cholecystostomy with removal of calculi; pancreatostomy with tampon drainage. Recovery. During convalescence this patient had several hemorrhages from drainage tract requiring packing for control.

Case 8. No. 17,157 * 12-18-1925—Female, age 51. History of gall bladder colics and digestive disturbance over a period of years. Duration of present illness four days; severe colic, nausea, vomiting, slight jaundice; greatest intensity of pain noted in left upper quadrant. In previous attacks or colics pain has always been noted in right upper quadrant. Pulse 96, temperature 101. Tender over entire epigastrium, most marked to left midline. Leucocytes 12,700. Urine shows albumin, bile, microscopic blood and pus. Tentative diagnosis: Cholecystitis. Operation: Gall bladder thick walled, non-adherent, contains multiple stones. Pancreas is enlarged, the left half of body and the tail are greatly enlarged and imbedded in inflammatory infiltration which involves the hilum of spleen and transverse mesocolon. No hemorrhagic deposit present. Cholecystostomy with removal of stones. Recovery.

Case 9. No. 17,796 * 6-17-1925—Female, age 17. History of digestive upset of one week's duration one year ago. Similar disturbance for past three weeks, characterized by burning, fulness and discomfort in epigastrium. Twenty-eight hours before admittance to hospital suffered severe, acute pain in left upper abdomen radiating to axilla and back, accompanied with marked vomiting. Temperature 101, pulse 120, slight jaundice, stony rigidity over entire epigastrium, tenderness most marked to left of midline. Bile, albumin and pus cells in urine. White cell count 14,800, P. M. N. 80, small lymphocytes 18, large lymphocytes 2. Tentative diagnosis: Acute abdomen. Operation: General cavity contains free fluid. Gall bladder shows subacute inflammation with adherent omentum and colon. Mass at site of left half of pancreas approximately 4x3x2 inches is exposed through gastrohepatic omentum; mass consists of nodular enlargement of part of body and tail of pancreas with adhesion of and inflammatory infiltration into transverse mesocolon. Pancreatostomy with drainage through gastrohepatic omentum. Cholecystostomy. Recovery.

Case 10. No. 18,893 * 12-5-1925—Male, age 56. History of gall bladder colics and digestive disturbance over a period of years. Present illness began with acute onset 40 hours ago—pain, nausea, vomiting, collapse. Temperature 101, pulse 140; leucocytes 12,000, P.M.N. 81, small lymphocytes 11, large lymphocytes 7, eosinophiles 1. Urine shows albumin, casts, microscopic pus and blood. Tender mass under right costal margin. Tentative diagnosis: Acute gangrenous cholecystitis. Operation: Acute gangrenous cholecystitis with multiple calculi present. Many areas of fat necrosis in omentum and transverse mesocolon. Mass at site of head of pancreas which is exposed through gastro-hepatic omentum; turbid fluid in lesser cavity. Pancreas presents multiple areas of necrosis. Drainage through gastrohepatic omentum. Cholecystostomy. Death on eighth day following operation.

SUMMARY

Acute pancreatic necrosis, acute hemorrhagic pancreatitis and pancreatic abscess are not separate clinical entities, but represent different stages of the same process, the origin of which is not entirely

clear. The rapid destruction of pancreatic tissue is due to the activation of trypsinogen within the gland itself; normally this is done by the enterokinase in the duodenum. The most logical explanation for its activation within the pancreas is that it is due to a retrograde injection of infected bile or duodenal contents through the ducts of wirsung and santorini as well as by the minute hemorrhages and bacterial toxins resulting from a pancreatic lymphangitis. Biliary tract infections have been present in more than 50 per cent of the reported cases, in 100 per cent of the series herewith reported. The lymphatics draining the gall bladder and bile ducts are in intimate association with the lymphatics of the head of the pancreas before they join the aortic group. Infection following this path readily enters the head of the pancreas where resultant inflammation and minute hemorrhages may readily activate the pancreatic ferment. The powerful digestant action of the ferment upon the blood vessels of the pancreas doubtless explains the presence of marked hemorrhagic deposit while the absorption of the autolyzed pancreas, toxic proteoses is in large measure responsible for the shock and early toxic manifestations.

The areas of fat necrosis commonly seen in the peritoneum, root of mesentery, mesocolon and omentum are due to the action of ferments in the escaped pancreatic secretion upon the fat molecule, breaking it up into its component glycerine and fatty acids. Cases reported in which such areas have been observed in the pericardial and extrapleural fat would indicate that these ferments are capable of transportation by lymph or blood stream.

There are no pathognomonic symptoms, pain, vomiting and collapse being the most important encountered. The physical signs will depend on the stage of the disease at which the patient is seen: in some cases the lack of symptoms and physical signs is remarkable when compared with the extent and severity of the local lesion.

Laboratory examinations are of but little aid in reaching a diagnosis; for this reliance must be had upon the history of previous upper abdominal disease, the present symptoms and physical findings. Pain radiating from the right costal margin across the upper abdomen, tenderness following the course of the pancreas, pain and tenderness to left of mid line, and the detection of a mass in the pancreatic area are beacon lights when elicited. After all it is not so important to make a correct

diagnosis of acute pancreatitis as it is to make a correct diagnosis of acute pancreatitis as it is to make a correct diagnosis of an acute surgical lesion in the upper abdomen: the predominance of symptoms at and above the umbilicus will usually permit of this localization when prompt operation will direct one to the pathology. The earlier the operation the less the destruction of the pancreas, the less the absorption of toxic proteoses the less the peritonitis and consequently the greater the number of recoveries. The indications are to relieve tension, to stop hemorrhage, to prevent leakage and to afford drainage: the fact that the pancreas has no proper capsule, being imbedded in loose retroperitoneal cellular tissue and fat permits of rapid extension of inflammatory infiltration: pancreatostomy with application of tampon and tube drains in and around the focus of pancreatic destruction will best fulfill these indications. The drainage of the gall bladder, when the condition of the patient permits, is a worthwhile procedure in promoting recovery and securing immunity from further attacks.

DISCUSSION

Dr. L. M. Bogart, (Flint, Mich.): I should like to ask if the doctor noticed any diabetic symptoms in some of these cases. I had a case about two months ago of acute gall-bladder where we drained the gall-bladder and we had a very severe diabetic coma in the patient. I called in Dr. Marshall and he ordered huge doses of insulin, 65 units, I believe, every three of four hours. When the drainage was made, the sugar had entirely disappeared and it has been free ever since.

Dr. Henry J. Vandenberg, (Grand Rapids, Mich.): I believe this is the best paper I have ever heard on the subject of acute pancreatitis. I am sure it has been the best illustrated paper I have ever seen on the subject.

I think there are two points that should be emphasized. One is the frequency with which we have cholecystitis preceding acute pancreatitis. When we are dealing with gall-bladder conditions we ought to think not alone of the gall-bladder as the principal part of the trouble, but we ought to have a larger picture of the disease and we ought to think first of the pancreas, particularly hepatitis and secondarily myocarditis, nephritis and so on and so forth. This picture that we have seen of acute pancreatitis is such a striking one that we can bear that in mind when we are thinking of gall-bladder trouble, of which we see so much. It ought to urge us to insist upon having something done for gall-bladder trouble.

There are several cases that are not so outstanding as the very acute cases, and I think the doctor mentioned that where we go into the abdomen and see these little patches, they have been there for some time, and we haven't the history, probably, of the real acute attack with shock, and so forth, that we sometimes get.

Another important thing that the doctor mentioned that I want to emphasize is that when we see a very acute abdominal case we ought not to

delay. I saw a case two weeks ago where the patient had acute pancreatitis. This patient died a few hours after I was called in. It was too late to do anything. I believe one should act immediately, and I don't know of anything that will give you such a striking picture of something seriously happening in the abdomen as acute pancreatitis. There is more shock with it than there is with a ruptured stomach or a duodenal ulcer. Those patients are cyanotic and the pain is worse than one generally sees in an abdominal condition.

I happen to think of two cases that we had in the last year or two who are alive. They have had all this time occasional attacks of very severe pain. I think that is quite to be expected as we know that pancreatitis produces pain.

When the gall-bladder is removed and the patients continue to have pain, we think it is because they had some pancreatitis or hepatitis. That is a pretty good explanation for it.

Dr. Irwin Abell: Answering Dr. Bogart's question, none of these patients presented sugar in the urine at the time of operation.

The two types of chronic pancreatitis that we see are the interlobular type, in which deposition of the fibrous tissue is largely between the lobes of the pancreas, and the other in which the infiltration of the fibrous tissue is an interstitial intra-acinous one and there will be destruction of the cells of the hilus of the lungs. In none of these did we have glycosuria at the time and yet in two of those we have subsequently had glycosuria, increased blood sugar, definite evidence of pancreatic function, and both of those patients at the present time are still under the care of their physicians and I presume will be as long as they live, on account of the deficiency of the pancreas, which is a result from this attack of acute inflammation. When the patient has apparently recovered from acute pancreatitis I think he should by no means be discharged from observation, because in a certain percentage of them you will get the evidences of pancreatic deficiency and in still another percentage you will get pancreatic cyst formation, and such an individual has to consider himself a fit subject for competent observation and care as long as he might live.

The man who has consistently examined the pancreas in every instance in which he has operated for gall-bladder disease knows the importance of the pancreatic involvement in the course of gall-bladder infection is at once apparent.

I presume in our own series of cases where we have examined the pancreas in cases in which we have operated for gall-bladder disease there has been more or less demonstrable disease and alteration in the contour, the shape, the size of the pancreas in at least 50 per cent of such cases. In a percentage of our series we have routinely removed a small piece of the liver for microscopic examination and rarely does your microscope show normal liver and cellular tissue. You will be able to demonstrate an interlobular, interstitial hepatitis with oftentimes fatty degeneration in the liver cells.

If you bear these facts in mind, hepatitis, pancreatitis, colonitis and cholecystitis, then we must, if we wish to deal intelligently with diseases of the gall bladder, look upon this entire system as one unit and not upon each alone; all must be considered really as one system if we wish to approach intelligently the solution of the problems that are presented by diseases which most oftentimes have their origin in the gall-bladder. (Applause).

ADENOMYOMA OR ENDOMETRIAL IMPLANTS IN THE ABDOMINAL WALL*

J. P. PRATT, M. D.

DETROIT, MICH.

Endometrial implants have been observed in many tissues. Apparently they are limited to the lower half of the abdomen or abdominal wall of the female, the majority being near the uterus. According to their location in the abdominal cavity or in the abdominal wall they have been designated respectively intra-abdominal or extra-abdominal. The latter group may be further divided into tumors of the umbilicus, round ligament, and laparotomy scars. The present discussion is concerned chiefly with the implants in scars.

Adenomyoma of the uterus and tubes was first described in 1896 by Cullen¹ and Von Recklinghausen². The first observation of adenomyoma appearing outside the uterus and tubes was made by Russell³ in 1899. Since then the interest in this characteristic growth has increased until at the present time there is an extensive literature on this subject. Great credit is due Sampson⁴ for his valuable contributions which have brought about such widespread interest.

A review of the literature reveals 42 cases to which are added the following four case reports:

Case No. 1—C. K., age 45, not married. Previous operations: Dilatation and curettage and ventral fixation. Dysmenorrhea was noted previous to operation. This was relieved for four years. Then the pain became intense in the lower abdomen during menstruation. Hysterectomy was done. At this time it was noted that there was a very intimate association of the body of the uterus and the abdominal wall. This was consistent with the statement that there was infection and a long convalescence at the previous operation. Following the hysterectomy there was considerable relief from symptoms. A nodule in the scar was noticed soon after operation. This increased in size at menstruation. It was more painful at this time. There was some pain and tenderness throughout the month. No change in color of the scar was noted. The lump was removed 14 months after the hysterectomy. Microscopic section showed typical endometrial cysts imbedded in scar tissue. On examining the scar about the uterus removed at the previous operation the same typical tissue was found. There was no definite encapsulation.

Case No. 2—M. C., age 37, married, no pregnancies. Previous operation 10 years ago through a midline incision. The exact nature of the operation not known but it was probably a ventral fixation. For the past four or five years there has been much pain in the abdominal scar at time

of menstruation. The menstrual flow has been more profuse. Patient also stated that blood came from the scar at time of menstruation. There was some increase in size at that time.

The scar as it appeared at the time of menstruation is shown in Fig. 1. In the middle of the scar there was a dark red nodule, irregular in outline, from which dark blood escaped to the surface of the abdomen. When menstruation was over this closed over but retained its color. The lump was tender.

At operation the mass in the scar was found to be continuous with the uterus. The mass and the uterus were removed. The line of demarcation between the nodule and normal tissue was not sharp. The left ovary contained a tarry cyst.

The specimen removed showed typical endometrial tissue in the scar.

Case No. 3—E. R., age 45, married. Previous operation eight years ago, repair of cervical laceration, appendectomy, and suspension. Two years ago she noticed a small lump in the laparotomy incision for a week before and during menstruation. At that the lump burned and pained. The lump was removed. It extended to the peritoneum but was not continuous with the uterus. It was not definitely encapsulated. The mass removed was 2x2 cm. It showed typical endometrial tissue in scar tissue.

Case No. 4—This is reported here through the courtesy of Dr. F. W. Hartman. Patient, age 41. Complaint, pain and weakness with menstruation. Previous operation, appendectomy 17 years ago. Suspension of uterus 16 years ago. Dilatation and curettage seven years ago. Salpingoophorectomy two years ago, probably for tubal pregnancy. Six months ago she noticed a tender lump in the lower end of the abdominal scar. This was more tender and painful at time of menstruation. Just preceding the period she would have a little dark discharge from the nodule. For the past month the pain in the lump has been constant. Examination showed a hard tender lump at the lower end of the scar. This was removed. It extended through the abdominal wall but apparently not attached to the uterus. The mass was about the size of a walnut, not definitely encapsulated.

Table No. 1 does not include any data concerning the specimens removed. However, a microscopic examination was reported in all instances. Characteristic endometrial tissue was noted. There was considerable variation in the relative amount of epithelium and stroma as well as in the arrangement of these tissues to form tubules, solid bodies or cysts. In about one-third of the cases there was a definite statement that the growth was not encapsulated or sharply defined, when examined during or after removal. The preoperative examination, however, often gave the impression of a fairly well defined nodule. The size of the nodule was expressed by comparison to a cherry, walnut, hazelnut, or chestnut. Measurements varied from 1 to 8 cm. The relation of the growth to the surrounding tissue was not constant. In 10 instances there was a definite connection with the uterus. As many

*Read at the Annual Meeting—September, 1926.

TABLE 1

No.	Year Reported	Age Pt.	Previous Operation	Yrs. after Oper. when seen for lump	Pain in lump at menstruation	Years Duration of lump	Reported by
1.	1903	35	Ventral fixation Salpingoophorectomy	2	Yes	—	Meyer—5
2.	1905	—	Ventral fixation	—	Yes	—	Amos—6
3.	1912	Mid.	Ventral fixation Salpingoophorectomy Appendectomy	6	Yes	2	Klages—7
4.	1915	—	Excision ovarian tumor	—	—	—	Amann—8
5.	1916	Mid.	Laparotomy for perforation of uterus at abortion	4	—	3+	v. Franque—9
6.	1919	—	Ventral fixation	8	—	—	Meyer—10
7.	1919	45	Ventral fixation	20	—	—	Fraas—11
8.	1919	38	Gilliam's suspension Colpoplasty	4	Yes	1½	Broun—12
9.	1920	30	Suspension	—	Yes	2	Mahle-MacCarty—13
10.	1920	46	Ventral fixation	Several	—	1	Mahle-MacCarty—13
11.	1920	34	Laparotomy for perforation at abortion	9½	—	3 days	Cullen—14
12.	1922	—	Removal of extensive adenomyoma	8	—	—	Cullen—15
13.	1922	—	Cesarean	—	—	—	Cullen—15
14.	1922	—	Cesarean	—	—	—	Cullen—15
15.	1922	—	Cesarean	—	—	—	Sampson—16
16.	1922	—	Cesarean	—	—	—	Sampson—16
17.	1923	30	Ventral fixation Salpingoophorectomy	4	—	3+	Lauche—17
18.	1923	35	Ventral fixation Oophorectomy	2	Yes	1+	Lauche—17
19.	1923	37	Ovarian operation	13	Yes	6	Lauche—17
20.	1923	26	Ventral fixation Ovarian tumor	4	Yes	½	Lauche—17
21.	1923	22	—	—	—	—	Tobler—18
22.	1923	25	Appendectomy Tubal Sterilization	4 2	Yes	1½	Tobler—18
23.	1923	41	Salpingectomy	12	Yes	2	Tobler—18
24.	1923	32	Tubal Sterilization	2	Yes	1½	Tobler—18
25.	1923	30	Appendectomy	6	Yes	—	Tobler—18
26.	1923	38	Ventral fixation	4	Yes	1	Lochrane—19
27.	1924	30	Cesarean Salpingectomy Hysterectomy	9 7 5	No	5	Sampson—20
28.	1925	46	Ventral fixation	—	—	1	Lemon & Mahle—21
29.	1925	35	Ventral fixation	4	Yes	—	Lemon & Mahle—21
30.	1925	38	Alexander's suspension	4	Yes	—	Lemon & Mahle—21
31.	1925	43	Ventral fixation	12	Yes	—	Lemon & Mahle—21
32.	1925	30	Suspension	5	—	2	Lemon & Mahle—21
33.	1925	27	Salpingectomy Laparotomy for adhesions	4 2	—	—	Lemon & Mahle—21
34.	1925	36	Ventral fixation Curretage	3	—	3	Lemon & Mahle—21
35.	1925	40	Hysterectomy and Oophrectomy	6	—	—	Lemon & Mahle—21
36.	1925	35	Salpingectomy and Right Oophrectomy Appendectomy	9	Yes	3	Lemon & Mahle—21
37.	1925	24	Ventral fixation	4	Yes	—	Vassmer—22
38.	1925	23	Ventral fixation Salpingectomy	5	—	5 mo.	Rosenstein—23
39.	1925	20	Cesarean and section of tubes	2	Yes	—	Danforth—24
40.	1925	32	Cesarean	3	Yes	2	Heaney—25
41.	1925	38	Suspension and section of tubes (fundus opened)	3	Yes	3	Heaney—25
42.	1925	36	Colotomy Laparotomy for pelvic inflammation	2	Yes	—	Nicholson—27
43.	1926	45	Ventral fixation	4	Yes	1	Here reported
44.	1926	37	Ventral fixation	10	Yes	4	Here reported
45.	1926	45	Suspension	8	Yes	2	Here reported
46.	1926	41	Appendectomy Suspension Salpingoophorectomy	17 16 2	— — Yes	— — ½	— — Here reported

Table 1 shows some of the observations most commonly noted in the case reports.

more specified that there was no such connection. Muscle, fascia, and skin shared in the involvement. In some instances all the layers of the abdominal wall were penetrated by the growth.

The clinical symptoms are few. At times the lump was discovered by accident. Pain in the scar at time of menstruation is the most constant symptom. Table I shows this was present 26 times. The pain may begin before and may last after menstruation. One report stated there was no pain. The others made no mention.

As shown in Figure I there may be bleeding from the nodule in the scar at

time of menstruation quite comparable to the menstrual flow from the uterus. (This was also noted in cases 17, 34, and 37). A few observed a change in color at time of menstruation. Fourteen noted increase in the size of the lump preceding or during menstruation. This is probably more common than is really indicated by the few notations concerning it.

The age of occurrence varies from 20 to 46. The average age is slightly less than 35. From 20 to 29 there were 7, from 30 to 39 there were 20, and from 40 to 46 there were 9.

The duration of the lump average two

years. The shortest time noted was three days while the longest was six years.

The interval between the operation and the appearance of the patient for observa-

on the pelvic organs of a woman in the child bearing age; most frequently the procedure involves either the uterus or tubes. After a varying interval a nodule develops in the scar containing typical endometrial tissue. This evidence is all in favor of implantation being the source of the growth.

The lesson to be learned is that endometrial tissue can be transplanted as has

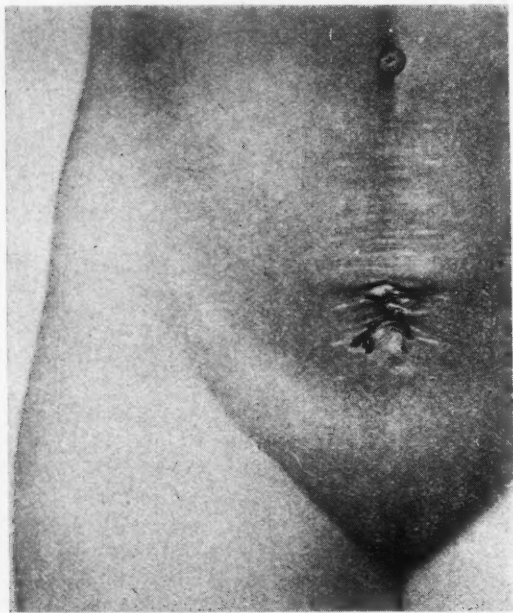


Figure 1—Case No. 44, showing menstrual flow from growth in scar.

tion of the lump in the scar varied from 2 to 20 years. The average number of years was six.

The type of the preceding operation was somewhat varied. By far the most common was ventral fixation. Next in frequency was opening of the uterus, either by Cesarean section or perforation during curettage. Suspension of the uterus was most common.

The explanations offered for the origin of endometrial tumors are varied. It seems quite probable that the origin is not

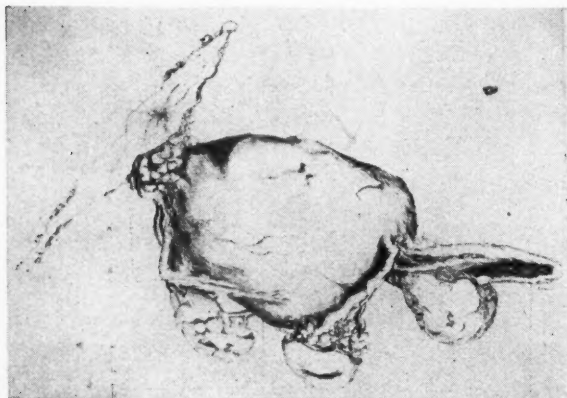


Figure 2—Case No. 44. Uterus with endometrial implant in abdominal wall and portion of the skin attached.

always the same. But in this particular group, in laparotomy scars, the sequence of events is quite uniform; an operation

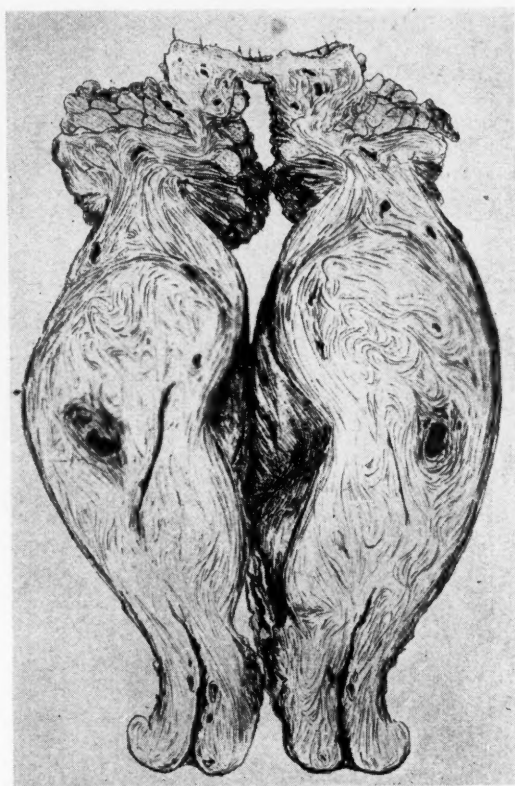


Figure 3—Cross section of uterus with adeno-myoma of uterine wall and endometrial implants in the scar of abdominal wall attached to the uterus.

been shown by others experimentally and by these clinical cases. The possibility of such transplantation should be considered while operating upon the organs containing endometrial tissue. Caution should be used not to traumatize normal endometrium, especially during ventral fixation of the uterus.

SUMMARY AND CONCLUSIONS

1. Implantation of endometrial tissue in a laparotomy scar is not an uncommon occurrence. Forty-two cases are reviewed and four new cases added.

2. It follows, more frequently, an operation in which normal endometrium has been traumatized.

3. Ventral fixation is the most common type of operation preceding scar implantation. Special care should be used during this operation not to penetrate the endometrium.

4. Although the growth in the scar was not encapsulated local excision was sufficient. Two cases recurred of incomplete removal. A second operation relieved both of these.

5. All local symptoms have been relieved by removal of the growth.

6. Regardless of the cause of other endometrial growth this group in the laparotomy seem to be due to implantation.

REFERENCES

1. Cullen, T. S.: Adenomyoma of the round ligament, Johns Hopkins Hosp. Bull. Balt. 1896, VII, 112-114.
2. Von Recklinghausen, F. D.: Die Adenomyome und Cystadenome der Uterus und Tubenwandung: ihre Abkunft von Resten des Wolffschen Körpers. Berlin, A. Hirschwald, 1896.
3. Russell, W. W.: Aberrant portions of the Mullerian duct found in an ovary, Johns Hopkins Hosp. Bull. Balt., 1899, X, 8-10.
4. Sampson, J. A.: Perforating hemorrhagic (chocolate) cysts of the ovary. Arch. Surg. Chicago, 1921, III, 245-323.
5. Meyer, R.: Ueber eine adenomatöse Wucherung der Serosa in einer Bauchnarbe. Ztschr. f. Geburtsh. u. Gynak., Stuttg., 1903, xlv, 32-41.
6. Amos, Adenomatöse Wucherungen des Serosae epithels in einer Bauchnarbe nach ventrofixation. Zentralb. f. Gynak. Leipz., 1905, xxix, 145.
7. Klages, R.: Ein Adenomyom in einer Laparotomienarbe nebst Bemerkungen zur Genese dieser Geschwulstbildung. Ztschr. f. Geburtsh. u. Gynak. Stuttg., 1912, LXX, 858-869.
8. Amann, J. A.: Über Fibroadenoma fornicale. Monatschr. f. Geburtsh. u. Gynaek., Berl. 1915, xlii, 492-498.
9. Von Francke, O. U.: Adenom in einer Laparotomienarbe. Zentralb. f. Gynak., Leipz., 1916, XL, 953-955.
10. Meyer, R.: Über den Stand der Frage der Adenomyositis und Adenomyome in allgemeinen und insbesondere über Adenomyositis seroepithelialis und Adenometritis sarcomatosa. Zentralb. f. Gynak., Leipz., 1919, XLIII, 745-750.
11. Fraas, E.: Über Adenombildung in der Bauchnarbe und Elongatio uteri nach Ventrifixur. Zentralb. f. Gynak., Leipz., 1919, 750-754.
12. Broun, L.: Adenomyoma of the round ligament following Gilliam's operation. Am. J. Obst., N. Y., 1919, LXXIX, 561-575.
13. Mahle, A. E. and MacCarty, Wm. C.: Ectopic adenomyoma of uterine type (a report of ten cases) J. Lab. and Clin. Med., St. Louis, 1919, V, 219-228.
14. Cullen, T. S.: The distribution of adenomyomas containing uterine mucosa. Arch. Surg., Chicago, 1920, I, 215-283.
15. Cullen, T. S.: Three cases of adenomyoma of the abdominal incision. Am. J. Obst., St. Louis, 1922, IV, 562.
16. Sampson, J. A.: The life history of ovarian hematomas (hemorrhagic cysts) of endometrial (Mullerian) type. Am. J. Obst., St. Louis, 1922, IV, 451-512.
17. Lauche, Arnold: Die extragenitalen heterotopen Epithelwucherungen vom Bau der Uterusschleimhaut. Arch. f. path. Anat. (etc.) Berl., 1923, cxxliii, 298-372.
18. Tobler, T.: Ueber tumorartige entzündliche uterindrüsensähnliche Wucherungen des Peritonealepithels in Laparotomienarben und über ebensolche Spontanwucherungen im Nabel. Frankfurt, Ztschr. f. Path. München, 1923, XXIX, 558-588.
19. Lochrane, C. D.: Endometrial adenoma of abdominal wall following ventri-suspension of uterus. J. Obst., & Gynaec. Brit. Emp., Lond., 1923, XXX, 213-214.
20. Sampson, J. A.: Benign and malignant endometrial implants in the peritoneal cavity, and their relation to certain ovarian tumors. Surg. Gynec. & Obst., Chicago, 1924, XXXVIII, 287-311.
21. Lemon, W. S. & Mahle, A. E.: Ectopic adenomyoma; postoperative invasions of the abdominal wall. Arch. Surg., Chicago, 1925, X, 150-162.
22. Vassmer, W.: Über Adenofibrose in Laparotomienarben. Arch. f. Gynak., Berl., 1925, CXXIII, 187-210.
23. Rosenstein, W.: Zur Kasuistik und Ätiologie der Adenofibrose in Laparotomienarben. Monatschr. f. Geburtsh. u. Gynaek., Berl., 1925, LXX, 297-302.
24. Danforth, W. C.: Adenomyoma of the abdominal wall. Am. J. Obst., St. Louis, 1925, X, 630-632.
25. Heaney, N. S.: Adenomas of endometrial origin in the laparotomy scars following incision of the pregnant uterus. Am. J. Obst., St. Louis, 1923, 525-630.
26. Nicholson, G. W.: Studies on tumour formation. Guy's Hosp. Rep. Lond., 1926, LXXVII, 188-252.

SOME PHASES OF DYSTOCIA

L. E. DANIELS, B. S., M. D.

DETROIT, MICHIGAN

There are several common types of dystocia which complicate labor and which cause the obstetrician a certain amount of anxiety.

In this discussion we do not refer to the types due to early recognizable causes such as contracted pelvis, tumors obstructing the birth canal, or malformations of the fetus, but rather to dystocia occurring in patients with normal pelvic measurements and without abnormalities of either baby or mother.

When a pregnant woman consults her physician for prenatal care, a careful history is taken and a physical examination including pelvic measurements is made in order to ascertain her physical qualifications for motherhood. Assuming no abnormalities are found, he instructs her in the essentials of prenatal care and notes in her record the diagnosis—normal pregnancy, normal pelvis; and the prognosis or outlook—normal delivery at term.

This patient then returns at regular intervals throughout the pregnancy, when the urine is examined, the blood pressure determination made and the patient weighed at each visit.

In the last months of pregnancy she is feeling well, she has gradually gained 15-20 pounds, she has overcome minor difficulties and no abnormalities or complications are found on examination. Now palpation of the abdomen is done to determine the presentation and position, the relation of the head to the pelvis and the size of the fetus. In 90 per cent of the cases the baby is of average size and there is no indication for particular concern about it. But the remaining 10 per cent present one of the problems which confront the obstetrician.

A baby weighing nine or ten pounds, if delivered through the birth canal, usually causes dystocia in a primipara, and we all know that the delivery often terminates only by interference, i. e., forceps delivery, or possibly version and in some cases by Cesarean Section after a long labor.

The child may be injured at birth, may be stillborn or die of asphyxia or cerebral hemorrhage, and the mother not infrequently is deeply lacerated. In addition there is increased risk of puerperal sepsis due to manipulation, and the very certain increase in morbidity rate coincident with operative procedures.

There are several complications of labor which may be directly attributed to a relative disproportion between the baby and the pelvis or to an oversize fetus in a normal pelvis. These include malpositions, such as persistent occiput posterior position, breech, brow and face presentations, asphyxia neonatorum, trauma to fetus, injury to maternal soft parts, operative deliveries, and puerperal infection.

Our inquiry then is—How shall we manage labor in this patient in order to preserve the life of the baby and prevent the possibility of serious complications in the mother?

First and most important is the prophylactic treatment or intelligent prenatal care. This means not a casual examination of the urine and blood pressure estimation to rule out toxemia, but also the careful watching and recording of the patient's weight at each visit. She should be instructed as to the proper diet and not allowed to gain an excessive amount of weight. From the seventh month the abdomen should be examined at least once a month and during the ninth month every week. These examinations are made in order to rule out disproportion between the size of the fetal head and the pelvis, and to estimate the weight of the baby.

Is it possible to make any reasonably accurate estimate of the size of the baby? If an honest attempt is made as a routine measure with each patient, taking into consideration the height of the fundus above the symphysis, the thickness of the abdominal wall, the amount of amniotic fluid and the size of the palpable fetal head at the inlet, then the estimate checked regularly with the true birth weight, it is possible to acquire considerable skill in fetal weight estimation.

It is an error of judgment to advocate interference except when there is definite indication. Yet it is vitally important, if we are to be conservative at the time of delivery, that the fetus be of a size capable of passage through the pelvis.

The estimated date of confinement is often misleading. We calculate nine months and seven days from the date of the last menstrual period as the probable date of the onset of labor. Many women deliver at or near that date, others have seven-pound babies three or four weeks earlier. DeLee states "It is wise to terminate pregnancy shortly after its 275th day," but he states also in the same paragraph that there is no positive method for determining the size of the child. It is my opinion that these statements should

be reversed. We can judge the size of the child with reasonable accuracy, but we cannot tell when conception took place nor when the 275th day arrives.

Whenever there is impending disproportion between the size of the baby and the normal pelvis, the medical induction of labor may be employed to advantage, and will in some instances eliminate the necessity for forceps delivery or Cesarean Section, and prevent injury or death to mother and fetus.

We have employed castor oil, quinine and high warm enemata for the medical induction of labor. The procedure is as follows:

- At 6 p. m.—1½ oz. castor oil.
- At 7 p. m.—10 grains quinine sulphate.
- At 8 p. m.—A high warm enema is given.
- At 9 p. m.—10 grains quinine sulphate.

If contractions do not begin by 6 a. m. the following morning, a second enema is given and at 7 a. m. 10 grains of quinine is repeated. If labor does not then begin, a second attempt is made repeating the procedure three days later.

Though medical induction with this method fails entirely in about 15 per cent of the patients, it is successful in the majority and is well worth the trial.

Any operative procedure for the induction of labor carries the risk of infection and should be considered major obstetrics, not applicable to the home. It should be performed only in a well equipped hospital under the best aseptic conditions. The operations are:

1. Stripping the membranes from the cervix.
2. Packing the cervix and vagina.
3. Voorhees bagging with or without rupture of membranes.
4. Introduction of the bougie.

These operations should be in reserve for those cases which do not respond to the medical induction, but used only when the demand for induction is indicated by impending disproportion.

What should be done for those patients who are allowed to go to term or beyond term, and do have oversize babies? A. C. Beck at the Long Island College Hospital resorted to a thorough test of labor in a series of 1,138 clinic cases reported in the American Journal of Obstetrics and Gynecology in December 1922. In this series there were 79 long labors. All but 13 patients delivered spontaneously. Forceps were used in only six cases, either because of a marked change in the fetal heart rate or a prolonged second stage. Two breech extractions were done for the same reasons, and five labors were term-

inated by the low two flap Cesarean Section. Seventy-four of the babies in this series weighed over 8.8 pounds. The experiment required no little courage on Beck's part, and the prolonged labors entailed excessive suffering, even though a minimum of interference was actually necessary.

When we consider, however, that in some of our representative hospitals one out of every eight pregnancies is terminated by forceps delivery, or one in every 25 by Cesarean Section, would not the more frequent induction of labor result in a greater number of normal deliveries and in fewer operations?

Let us now consider a second type of dystocia, one with which everyone practicing obstetrics is familiar. I refer to delayed labor in patients whose pains begin well, and in which there is good progress until near the end of the first stage, or in the second stage when the contractions become weaker and finally stop—the so-called secondary uterine inertia. After a sleep and rest the pains return and are usually strong. This type is best treated by rest which may be given by morphine. Delivery should not be effected when the uterine muscle is fatigued, unless the fetal heart shows signs of embarrassment. Usually this is not the case, because as the pains become weaker there is little pressure on the fetal head. Delivery at the time of uterine fatigue places the patient in danger of serious post-partum hemorrhage.

The third type of dystocia or delayed labor to which your attention is called occurs in both multiparae and primiparae, in patients with relaxed abdominal muscles. The first stage may progress normally with good uterine contractions, but in the second stage, with the head on the perineum, progress stops. The pains continue regularly and strong, but with each contraction the abdominal wall rises and there is no advance of the head when the patient uses her secondary forces. There is but little pressure exerted downward in the axis of the birth canal, but rather outward in the line of least resistance at right angles to the axis of the pelvis. Forceps may be and usually are applied in these cases, but here again the patient is subjected to the risk of infection and often unnecessarily.

Delivery may frequently be effected by the application of a tight abdominal binder which should be used early in the second stage of labor while the contractions are strong. The X-ray shows this effect fairly

well in a patient with a pendulous abdomen. The binder used was designed by Beck and is fastened by means of straps and buckles, making it capable of being applied snugly. When properly adjusted it holds the uterus perpendicular to the pelvic inlet and prevents distention of the weaker parts of the abdominal wall, thereby increasing the intra-abdominal pressure making the bearing-down efforts more effective. The lower straps may be loosened as frequently as desired to allow for auscultation of the fetal heart. The action of the binder is always within our control and in this respect has an advantage over pituitrin.

In conclusion—a reduction in the number of cases of dystocia may be effected by intelligent prenatal care, especially during the last few weeks of pregnancy; by the medical induction of labor in those women who show an impending disproportion between the size of the baby and the pelvis.

In order to reduce infant mortality and maternal morbidity, conservative obstetrics should be the rule at the time of delivery, but good obstetrical judgment and technical skill are requisites when the indications for interference are present. In the interests of both mother and child more attention should be given to the prevention of necessity for operative procedures and their attendant risks.

PREGNANCY AND LABOR FOLLOWING GYNECOLOGICAL OPERATIONS*

R. S. SIDDALL, M. D.,

(From the Obstetrical Department, Henry Ford Hospital.)
DETROIT, MICHIGAN

With the exception of amputation of the cervix and fixation of the uterus, there is little in the literature in regard to pregnancy and labor following gynecological operations. Perhaps this has been due in part to the fact that ill results are fewer or less disastrous following some of the other common operations. On the other hand, the proportion of obstetrical patients who have undergone such operations is now so considerable that the possible resulting complications, even though uncommon, are worthy of consideration.

A study of 1,400 hospital obstetrical cases showed that 80 or 5.7 per cent had previously undergone gynecological interference, without taking into account such minor procedures as uterine curettage and cauterization of the cervix. Many of these

*Read at Annual Meeting, September, 1926.

patients had been subjected to multiple operations, so that the number of adnexal operations was 38, ventral suspensions of the uterus 35, plastic operations on the cervix 14, and repairs of the vaginal outlet 16. No doubt the incidence outside of hospitals is lower, yet even there it is probably considerable.

OPERATIONS ON THE ADENEXA

As should be expected, operations on the adnexa were of the least significance during pregnancy and labor. In fact, only one patient out of our group of 38 had any complication which might have been due to the operation, namely, severe abdominal pain during pregnancy which was attributed to adhesions.

SUSPENSION OF THE UTERUS

Round ligament suspension of the uterus, in contrast to ventral fixation, has hitherto received scant consideration. However, it is commonly met with among obstetrical patients (one in every 40 in our series) and may occasionally lead to disastrous results, especially when the unintentional but frequent result of fixation from adhesions occurs. DeLee¹ states that uncomplicated suspensions may cause abortions and abdominal pain, and that fixation by adhesions may lead to abortion, difficult labor and post-partum hemorrhage. J. W. Williams² as early as 1906 called attention to such possibilities and now feels that suspension, as well as fixation, should not be employed during the child-bearing period without sterilization. Manton³ expressed somewhat the same opinion before this society in 1924. Spalding⁴, in reporting a case of rupture of the uterus following suspension, stated that because of this danger, as well as the questionable therapeutic effect on sterility, backache, etc., he practically confined the operation to cases of pelvic varicocele.

The fact that our results do not bear out such views may well be due to the smallness of the series, though in general they are in accord with those of Cragin⁵ and Reyes⁶. Only one of our 35 patients complained of severe abdominal pain. The occurrence of abortion was approximately four times as frequent as in the whole group but still was not high, being three in 35 or about 8.6 per cent. Although the uterus was fixed to the abdominal wall in six of the 32 patients who went to term, no malpositions resulted. Furthermore, in no instance were the adhesions sufficiently strong to displace the cervix enough for serious dystocia. The average length

of labor for the 12 primiparas was approximately 18 hours and for the 20 multiparas seven hours, the longest labors for the two groups being 36 hours and 15 hours, respectively. Twenty-nine of the deliveries were spontaneous, two by breech extraction, and one by low forceps. Bleeding was not increased, the largest amount of blood lost by any patient being 725 c.c., with an average for the 32 deliveries of 240 c.c. as compared to an average of 305 c.c. for the first thousand deliveries in the series.

The after results confirmed DeLee's¹ statement that pregnancy often impairs the operative result. In five, or 15.6 per cent, of the 32 patients delivered at term the uterus was in retroposition six to eight weeks post-partum. The possibility of such a result, as well as the danger and the often questionable therapeutic value, would seem to be sufficient reason for thorough consideration of the circumstances before undertaking suspension of the uterus during the child-bearing period. In the event of pregnancy following such an operation, the obstetrician should be certain of the position of the cervix at the end of pregnancy as a guide to the method of delivery to be employed.

OPERATIONS ON THE CERVIX

It was stated before that consideration of operations on the cervix has been largely confined to amputation. As a consequence, this operation is now seldom performed before the menopause because of the frequency of abortion in the event of pregnancy, or difficult labor should the pregnancy go to term. In the present series of 1,400 there was only one case each of high and low amputation, neither presenting any special features.

The advantage of trachelorrhaphy over amputation of the cervix, so far as future pregnancies are concerned, was pointed out by Leonard⁷ in 1914. He found that, whereas amputation resulted in frequent abortions and dystocia, trachelorrhaphy usually had no such ill effect. Rawls⁸ while finding that trachelorrhaphy might be an even more potent cause of dystocia, agrees that it does not so often lead to premature interruption of pregnancy as does amputation.

In this series there were eight deliveries following trachelorrhaphy, without any special dystocia attributable to the operation. Two labors were prolonged to approximately 25 and 33 hours, respectively, but in each instance labor pains were weak and inefficient. The average length of

labor for the group was 11 hours and 45 minutes, not far from the generally accepted average for multiparas.

The effect of labor on these repairs is of interest. Rawls⁸ found that relaceration occurred in 50 per cent of his cases. In our group it occurred definitely in five or about 42 per cent. In several other instances, where an imperfect operative result had been obtained, the tears were considerably deeper after delivery.

The Sturmdorf⁹ conical excision of mucosa had been done in four cases. If we can judge from the literature, very few pregnancies have been observed following this operation. Magid¹⁰ recorded nine with abortion in one instance but normal labors at term in the others. Coventry¹¹ saw two cases in which there was no ill effect except delay in the first stage of labor. Eastman¹² reported an instance of rupture of the uterus, after 10 hours and 40 minutes of labor, from an upward extension of a cervical tear. Polak¹³ believes that tracheloplasty may have the same effect on pregnancy and labor as amputation, but not so frequently. Among our four cases there occurred one abortion at four months, two premature labors, and only one normal labor at term. In spite of the excellent plastic result of this operation, it cannot yet be recommended, from the standpoint of our present information, for use during the child-bearing period.

REPAIR OF THE VAGINAL OUTLET

More or less extensive gynecological repairs of the vaginal outlet had been done on 15 patients who were delivered at term. No definite dystocia resulted in any case, but relaceration occurred in nine instances, and in four episiotomy was done. Although all were repaired again, and healing was per primum, there was considerable relaxation following several of the tears, apparently due to stretching and separation of deeper tissues. Mesio-lateral episiotomy gave excellent results where employed and perhaps should have been done in the majority of these patients. We consider that we have practically an absolute indication for this procedure when there has been a successful repair of a third degree tear, in order that the weak scar tissue union of the sphincter ends be not jeopardized by tearing or even stretching. Two such patients in our series were treated in this manner with no impairment of sphincter action. Naturally, episiotomy would also be indicated to overcome dystocia secondary to a perineal repair, as in the case reported by Roume¹⁴.

DISCUSSION

Dr. Lewis E. Daniels (Detroit): With regard to suspension as compared with shortening of the round ligaments, the ventral suspension operation should not be done in a child-bearing age as Dr. Siddall said any more than a Sturmdorf operation should be done. I think it is a mistake to perform a ventral suspension for a retroversion anyway.

The shortening of the round ligaments if done according to the technic of Simpson, in which the ligaments are shortened and brought through the internal ring and fastened to the under surface of the fascia, should not give any complications during labor provided the peritoneum has been properly closed, that is, the peritoneum has been closed with its layers turned out so that no adhesions are formed.

I had occasion to deliver a patient who was in her seventh pregnancy and had never had a live baby. In the six previous pregnancies she had aborted or had given birth to a premature baby in each case. Following the sixth pregnancy, she had a Sturmdorf operation done in Ann Arbor. She became pregnant in the summer of last year and delivered in February of this year a full term baby weighing seven and one-half pounds. Her labor lasted for three hours. There was no dystocia due to the Sturmdorf operation. Inasmuch as this operation had been done in order that the patient might carry her pregnancy to term, we felt the result was very good.

I have one other case in mind that I will just mention. It is a case that delivered a full term baby following a Sturmdorf operation without dystocia, and there was no difficulty due to the operation.

Dr. A. E. Catherwood (Detroit): Recently I saw in the literature a case report of rupture of the uterus following Sturmdorf operation. Perhaps some one present will remember who it was by; I have forgotten who reported the case. I had quite a vogue of doing the Sturmdorf operation when it first came out and before we started using the cautery. I have delivered five cases, although I think there are more than that, in which I did a Sturmdorf, and they have all gone through perfectly normal pregnancies with no miscarriages at all, and with no dystocia whatever. None of them were premature any appreciable amount. They have been perfectly normal. Three of the cases were rather elderly primiparae who had had bad endocervicitis. That was the reason for the Sturmdorf. These patients had been sterile until that time, and now they are perfectly well, perfectly normal labors and have live babies.

If a Sturmdorf is done properly, with the proper suturing of the flaps, and done within reason and not really made an amputation, I don't believe it adds anything in the way of dystocia or trouble of any kind to normal pregnancy. That has been my observation.

Dr. Harold Henderson (Detroit): I think it makes all the difference in the world as to what kind of operation is done. The statistics he has collected are operations done by a great variety of men, and the types of shortening the round ligaments are naturally various types. Under such circumstances you wouldn't expect such good results as if the operations had been done by the same man, and the same man had been doing very good work.

I have delivered one patient four times follow-

ing shortening of the round ligaments after the type of operation Dr. Daniels described. Her uterus is up in good position and her perineum is still in pretty good shape. My experience includes several Sturmdorfs without any particular dystocia. Also myomectomies and resections of the tube. Most of the gynecological operations can be done with safety with regard to the future obstetrical case if the gynecologist bears that in mind. The chief difficulty is a great many men in doing the operation do not think about the patient having childbirth again. Under those circumstances, I think many things are done which do make dystocia possible.

Dr. R. S. Siddall (Detroit): My series of cases is too small to draw any conclusions from, and I am glad to hear of other cases reported after suspensions and Sturmdorf; still in those series we have the same limitation. The series are also too small to draw any hard and fast conclusions.

With regard, though, to the shortening of the round ligaments trouble has been experienced. So much so that Williams in his textbook reports a number of cases of shortening of the round ligament with extreme difficulty in at least four, I believe. He states he does not believe in any type of suspension and especially fixation during child-bearing period.

I have a patient at the present moment who was operated on by a very capable surgeon who shortened the round ligaments. I saw her the fifth month, and it was evident that the uterus was adherent to the abdominal scar, and even at that time the cervix was pulled up as high as the promontory of the sacrum. The final outcome of the case will depend upon whether the adhesions are dense enough to hold the uterus up in its present position.

With regard to the Sturmdorf operation, I have no doubt if it is done properly that it will not give any trouble; it should not; the muscles should not be touched. On the other hand, because of the difficulty of dissecting away all of the mucosa and not touching the muscles. I doubt whether the results would always be good. There is no definite line of clearance. It is almost necessary to get out some of the muscle.

BIBLIOGRAPHY

1. De Lee, J. B.: *The Principles and Practice of Obstetrics*. 4th ed. Philadelphia and London, 1924, W. B. Saunders Co., 429-431.
2. Williams, J. W.: *Dystocia Following Ventral Suspension and Fixation of the Uterus*. Southern Surg. and Gynec. Ass., 1906, XIX.
3. Manton, W.: *Dystocia Resulting from Pathology of the Soft Parts of the Generative Tract*. J. Mich. M. Soc., Grand Rapids, 1924, XXIII, 103-108.
4. Cragin, E. B.: *Operative Treatment of Retroversion of the Uterus*. Surg., Gynec. and Obst., Chicago, 1926, 602-605.
5. Reyes, C.: *Pregnancy, Parturition and Health After Surgical Replacement*. Surg., Gynec. and Obst., Chicago, 1926, XLIII, 317-321.
6. Spalding, A. B.: *Rupture of the Uterus After Operation for Uterine Suspension*. Surg. Clin. N. Am., Phila., 1923, III, 795-800.
7. Leonard, V. N.: *The Post-Operative Results of Trachelorrhaphy in Comparison With Those of Amputation of the Cervix*. Surg., Gynec. and Obst., Chicago, 1914, XVIII, 35-45.
8. Rawls, R. M.: *End Results of Amputation of the Cervix and Trachelorrhaphy*. Am. J. Obst. and Gynec., St. Louis, 1922, III, 1-20.
9. Sturmdorf, A.: *Tracheloplastic Methods and Results. A Clinical Study Based Upon the Physiology of the Mesometrium*. Surg., Gynec. and Obst., Chicago, 1916, XXII, 93-104.
10. Magid, M. O.: *Obstetrical End Results of the Tracheloplastic Operation*. New York M. J., 1921, CXIV, 387-389.
11. Coventry, W. A.: *Indications for and End-Results of the Sturmdorf Operation*. Am. J. Obst. and Gynec., St. Louis, 1925, IX, 804-808.
12. Eastman, N. J.: *Spontaneous Rupture of the Uterus in Labor Following Sturmdorf Tracheloplasty*. Am. J. Obst. and Gynec., St. Louis, 1925, XI, 500-502.
13. Polak, J. O., and Phelan, G. W.: *What Constitutes the Surgical Cervix?* Am. J. Obst. and Gynec., St. Louis, 1925, V, 640-646.
14. Roume, M.: *Sur un cas de dystocie par resistance exageree du releveur consecutive a une perineorrhaphie*. Bull. Soc. d'obst. et de gynec. de Par., 1922, XI, 551-554.

FOREIGN BODIES IN EYE BALL*

JOHN RANDOLPH ROGERS, M. D.

GRAND RAPIDS, MICHIGAN

The subject of penetrating foreign bodies has been gone into with such great thoroughness by many practitioners of vastly greater experience than mine in this field, that modesty should hinder me from presenting it before this audience. As we must, however, consider each case of foreign body in the eyeball as a law unto itself and in view of the difficulties of procedure and uncertainty of results, the report of a few cases selected for their diversity may bring out a profitable discussion and helpful suggestions for the future. The procedure used will be mentioned as each case is presented. I wish to emphasize, however, the necessity, becoming to me more apparent all the time, of the surgeon not taking anything for granted—that is that every eye injury should be considered guilty of the presence of a foreign body until proved innocent. In other words when there is the slightest possibility of a foreign body being present the X-ray should be resorted to, followed by localization with Sweet's localizer when its presence is established.

My thanks are due to Dr. Vernor M. Moore, of Grand Rapids, whose charts and pictures I am showing at this time, for his careful and accurate work.

CASE REPORTS

The examination of the right eye with numerous radiograms fails to show a foreign body which can be definitely interpreted as such. We are therefore unable to find any points which can be considered as foreign bodies, and are therefore unable to localize in this case.

Foreign body localized 12 millimeters back of cornea, one millimeter below center, and eight and a half millimeters to temporal side.

Case 1—J. G., age 32, struck in right eye by sliver of steel, January 27, 1925, while hammering. When first seen, the day following the injury, a small central wound of the cornea was evident, as well as an opening in the lens capsule about 3 m.m. from center of cornea. No wound of iris was made out. After dilating pupil a beginning opacity of lens was apparent, Vn 20/200. An X-ray taken at this date showed the location as in

*Read at Annual Meeting, September, 1926.

chart, the foreign body of very minute size being suspended in the vitreous—having traversed the entire thickness of the lens. At this time the large magnet was applied, but no effect was had on the position of the foreign body.

The lenticular opacity gradually increased, vision reduced to 10/200 a week later, and two weeks later to indistinct form perception. The eye remained practically free from inflammatory reaction and further operative measures were refused by the patient.

The curious feature of this case was that an X-ray taken two months later failed to reveal any foreign body; owing to its small size it had evidently become oxidized and absorbed.

The examination of the left eye for injury 1/16/25—foreign body—was carried out as follows: Radiograms made on the same film, first with the eye directed downwards and then with the eye directed upwards,—the foreign body was seen in the region of the orbit, which was in the lower part, and on looking upwards moved with the vision, and somewhat anteriorly. This is interesting because it checks up with the Sweet localization. With Sweet localizer, the foreign body was measured as $2\frac{1}{2}$ m.m. by 1 m.m., and is located 8 m.m. back of the cornea, 9 m.m. below, and 2 m.m. to the temporal side. It therefore appears to be lying in the vitreous, along the floor of the globe.

Case 2—N. DeR. struck in left eye January 15, 1925, by sliver of steel, while hammering. Patient called at my office, but no foreign body was found. A small apparently superficial wound of conjunctiva at outer canthus. Patient was given simple treatment, and told to return in a few days if eye caused any trouble. Vn. 20/20. This patient was not seen again until April 8th, when patient returned complaining of some failure of vision and some discomfort in eye. Examination showed a slightly dilated pupil, numerous floating vitreous opacities and a generally hazy vitreous, but a fairly distinct view of fundus could be obtained. Vn. 20/40. An X-ray was taken revealing the foreign body as shown in chart. With a fully dilated pupil the foreign body could be seen. The foreign body having been in the eye for so long a time a consultation was had with Dr. Parker, who after getting identical results with the Sweet Localizer, advised removal through the Scleral route. This was accordingly done on May 6th, 1925. A flap of conjunctiva was dissected and the sclera exposed—a superficial suture was introduced on both sides of the proposed incision, the incision made by plunging a cataract knife through the sclera so as to make an incision coinciding with Antero-posterior axis of the eye. The tip of a portable magnet was applied to the wound and the foreign body removed without loss of vitreous. The scleral wound closed by one stitch and two stitches in the conjunctiva. Recovery was uneventful, patient leaving the hospital in 5 days. Vision gradually improved, being 20/50 three weeks after operation and 20/40 about six weeks later. This condition remained the same until 6 months later when an extensive retinal detachment in the opposite pole of the eye occurred, reducing vision to indistinct form perception—where it has remained ever since.

The examination of the radiograms of foreign body in eye, with Sweet localizer, shows the foreign body 10 x 5 millimeters, lying 6 millimeters back of center of cornea, 11 millimeters below, and neither to temporal or nasal side. The lo-

calization was made of the edge nearest to the lower border of the eye. We assume therefore that the foreign body lies outside of the globe, in the median line, 11 millimeters from center of eye-ball. The long axis is antero-posterior.

Case 3—H. S., age 42, was struck in left eye by piece of metal while using a punch hammer—was seen by another surgeon at that time, and an X-ray picture taken showing a large foreign body apparently embedded in the lower wall of the eyeball. Was advised at that time that no attempt at removal should be made. I saw this patient six weeks later as he was suffering some discomfort and there was a beginning discoloration of the eyeball and adnexa. An X-ray taken at this time with the localizer showed a very large metallic mass, which although in intimate contact with the lower anterior part of the sclera had not apparently perforated it. The eye being already sightless, and thoroughly disorganized by the violence of the injury, there was no question except to relieve discomfort. The operation was postponed for one reason or another, principally by the refusal of the employing company to stand the expense, but was finally undertaken at the patient's own expense on February 16th, 1926, more than seven months after the accident. At this time the conjunctiva was thoroughly discolored by iron rust and the eye very uncomfortable. The removal was comparatively easy and done under a local anesthetic, although the foreign body was encapsulated and firmly attached to the sclera. The location of foreign body, which measured 10x7 m.m. and weighed 15 grains, is shown in the chart and accompanying picture.

The examination of the right eye with approved Sweet localizer, shows the foreign body about one by two millimeters in its dimensions, lying 26 millimeters back of the cornea, one millimeter below, and three millimeters to temporal side. This localizes in the normal eye back of the globe, the normal eye measuring from 23 to 24 millimeters in antero-posterior diameter. Inasmuch as the wound of entrance is directly over the center of the cornea, the foreign body must have passed through the lens and through the posterior part of the eye. Two independent localizations were made, showing a variation from each other of one millimeter in antero-posterior diameter. Both however localize outside of the eye. It is within the margin of error possible that the foreign body may be located on the sclerotic coat in the posterior part of the eye. We prefer to assume, however, that it is entirely outside of the globe.

The examination of the stereograms of the skull with particular reference to the right eye, for injury 6/1/26 when hit face against table, shows the following: There is a foreign body shaped something like an arrowhead, with the point projecting to the median line below the splenoid, and the outer or blunt end, lying at the inner side of the right orbit. It, therefore, inclines downwards and toward the median line and backwards from the nasal side of the orbit, to the point above indicated. It is regular in outline, has a flange on the anterior part, and is apparently hollow, as shown by regular area of lesser density extending from the anterior end towards the point. It is of a density less than metal, and of about the consistency of a piece of bone. We are unable to identify the material in this foreign body.

Case 4—P. S., age 28, injured in same manner

as other cases, that is while hammering on steel—July 17, 1926. Was seen immediately after the accident. At this time there was a central wound of the cornea, through which aqueous was escaping. The following day after the anterior chamber had re-formed and the pupil dilated by atropine a central wound in the capsule and beginning milkiness of the lens could be seen. The X-ray shows the foreign body having traversed the entire eyeball, and lodged in the tissues of the orbit. In the course of a week the entire lens had become opaque and vision reduced to indistinct form perception. No operative measures were undertaken in this case as there was no hope of extracting the foreign body, and the patient refused extraction of the lens. The result would be very uncertain as it is quite likely the foreign body traversed the macular region.

Case 5—L. S., age 22, was admitted to hospital June 1, 1926. His account of the accident was that in scuffling with a fellow employe he had slipped and in falling had struck the right eye on the corner of a table. Was seen by interne and surgeon in charge, who found a wound in upper lid of right eye near inner canthus which was considerably swollen, and bleeding freely. The wound was stitched and the patient put to bed.

Ten days later I was asked to see and take charge of the case by the first attendant as the eye was nothing well. At this time there was very extensive swelling of the tissues surrounding the eye and a tremendous chemosis of the conjunctiva which prevented the closing of the lids. The eyeball apparently was normal, cornea clear, vision good, pupil reacting normally, no fundus changes. The conjunctiva was scarified on June 11th and again on June 16th, and diathermy used daily—by June 19th patient was able to close the lids, and insisted on returning to his home which was in another part of the state.

Reappeared again in my office about six weeks later, about August 18th, complaining only of double vision. On examination I found the right eye markedly deviated to the right, and downward. A hard mass could be felt in the upper inner angle of the orbit which I took to be a dislocated fragment of fractured bone. The X-ray shows what actually was present.

We have been unable to locate this patient since that time until Monday, September 13th. On this day there is more swelling of upper lid and some discharge from eye which the patient attributes to having taken cold. He was very much surprised when shown the X-ray picture and still adheres to his original version of the accident—so that the nature of this foreign body will not be known until it is extracted. This, I hope to do next week.

DISCUSSION

Dr. Don M. Campbell (Detroit, Mich.): I am sure we have all enjoyed Dr. Rogers' very unusual and interesting series of cases which he has presented to us in his usual scholarly manner. The cases themselves were all of extreme interest and many of them are unique.

I don't know that I want to particularly discuss the individual cases excepting just to say a few words about the general subject of foreign bodies in and around the eye.

The first thing that strikes one is that the subject itself has become of very great interest and very great importance, as compared with a few years ago.

If you will allow me, I should like to put on

one slide that is part of a paper which I read last year. However, it went on to say that the subject had become of very great importance and it just was a little thing in general literature that showed how important the whole subject of industrial injuries had become in America during the last ten years. There are so many different places that a foreign body can be situated that one can say very little in a general way about the general subject of foreign bodies but must judge every single case individually.

Slide. Here is one that is situated in the cornea, and there is only one route by which this foreign body can be removed; that is by the careful dissection in front of it through the corneal layers and then the application of a magnet to the wound and the extraction of the foreign body in that way. The thing that can happen to that foreign body is that it may drop into the anterior chamber and there become a true intra-ocular foreign body, in which the case the diagram we have now represents the situation and the foreign body can be extracted by corneal scleral section and the application of the magnet to the wound.

We have this slide that I wish to put on for a moment so that we can just get a vivid idea of the importance of this thing.

The importance of medical and surgical work to modern industry is well illustrated by the fact that in January, 1926, the American Academy of Political and Social Science, in the edition of their annals, devotes its entire issue of 224 pages, made up of 43 articles by the foremost executive industrial surgeons, safety engineers, teachers, publicists and government experts, to the consideration of the various phases of industrial saving, so that the relation of the profession to industry has become an extremely important one. Now, of course, it is a very simple matter to remove that foreign body; it can be removed without any difficulty.

Here is one that represents a little different problem. This foreign body is lodged in the iris; it has gone through the cornea, through the anterior chamber and is lodged in the iris. We do a lot of these things to get ideas into your head that certain things should be done in a certain way. In order to get this foreign body out, you have got to do two things. You must dislodge it in the iris and you must extract it from the anterior chamber. The practical thing that has come by a rather long experience is that the way to do that is to extract it, if possible, from the iris before you open the anterior chamber. You can do this very frequently by a strong magnet pull. It is very much easier to extract the foreign body from the anterior chamber if it is loose in the anterior chamber than if you have to drag it out from the iris after you open the eyeball.

Here is an extremely critical situation. This is a picture, all of these are drawn from cases, and they are extremely difficult to handle, especially this type.

Here is a man who had a small piece of steel perforate the eyeball and the X-ray showed that it lodged in the sclera body. His vision was three-fourths, his eye absolutely uninjured, the normal eye as it had been before injury; his vision was perfect in every way. The problem was how to extract this thing without injuring the eye. First we made very accurate localization. You can get a fairly accurate localization usually by the X-ray, but in a case of this kind the X-ray localization is not quite accurate enough to tell you

just where you have to go down through the sclera in order to reach this place, and sometimes a very careful examination of the eyeball will show the wound entrance. Sometimes the wound is so small that in the course of a day it disappears and then it is extremely difficult by inspection to tell where the thing went in, at least there is a great deal of difference when we make the approach two or three millimeters to one side.

We have found that there are two things that will locate and tell exactly where that foreign is. Sometimes we get them one way and sometimes another.

This particular case was gotten by examination in which Dr. Carter, who is associated with me in this kind of work, was able to find that the sclera and the conjunctiva had become adherent at a certain point in the neighborhood of this wound and so he judged at that point it must have been that the foreign body passed, and by dissecting down through the conjunctiva and then dissecting down through the layers of the sclera we were able, by the introduction of the magnet into this small aperture we made over this section, to extract this foreign body without entering the eyeball, which insured, of course, a perfect normal eye in the future. A very much different story might have been told if he had entered the interior of the eye and searched around with the sclera and in that case there is a certain magnet point to find this. Sometimes you can't even find adhesion between the conjunctiva and method by the use of the magnet by which we are able to tell.

This is a very interesting point in accurate, minute localization of the presence of foreign bodies situated any place within the eyeball if you can get into contact with the sensitive tissue. That is, it would be of no use, for instance, in trying to localize in the lens or in the vitreous if it was not possible to draw it into contact with the vascular and nerve construction of the eyeball, but with this method I am going to tell you about in the particular case we have just had, it helped out very much in the localization of the foreign body.

Slide. That would have been the other method, the next best method. To remove it, would be to drag it into the anterior chamber through magnetic pull and then out through the cornea, which we are able to do sometimes.

Slide. Here is a very interesting problem in intra-ocular foreign bodies, the fetching of foreign bodies in the lens, and we have two diagrams here that indicate what the situation may be. In this particular one the foreign body lies in the lens but a piece of it sticks out in the anterior chamber. That is a condition that cannot be left and must be dealt with immediately because the iris contracting will come in contact with the foreign body and there produce irritation, produce iridocyclitis eventually and come in contact with fluid of the eye; the iron becomes oxidized and a condition of siderosis is brought about.

Slide. Here is the other situation that occurs in foreign bodies of the lens. That is where the foreign body is imbedded entirely in the lens, surrounded by the lens tissue. I believe that in the majority of cases of this type it is far better to leave this foreign body alone and then extract the foreign body and cataract by the ordinary cataract extraction. The thing can, however, be dragged out in the anterior chamber and be removed as an anterior chamber extraction, but at least in our experience the foreign body is best

handled by allowing it to cataract and then extracting the foreign body and the cataract together.

If you have one of these foreign bodies and don't know the exact location of it, take the small point of the ring magnet and go around the ring with it, touching it at different places; it is perfectly astonishing how accurately the patient will say that that is where he has the greatest pain. It adds a great deal of accuracy and precision to the localization of the foreign body.

In conclusion I just want to show you we have many other of these possibilities in foreign bodies. When I first began to be interested in intra-ocular foreign bodies, the usual way, and the only way known to extract these things was by a scleral puncture as is shown in this diagram. However, we almost always got the foreign body; that was not difficult at all, but almost all of these cases eventually, as the case that Dr. Rogers described to you, ended in the destruction of the sight, so that it became imperative that some other way be devised of getting these foreign bodies out other than making a scleral puncture. Ten of 15 years ago scleral puncture was the usual thing; now that has become the exception. At the present time we very, very seldom make a scleral puncture for the removal of the foreign body in the vitreous.

We have been able, by a refinement of magnet pull manipulation, to drag these cases of foreign body up through the suspensory ligament into the posterior chamber, out through the pupil to the anterior chamber and then have it removed. It is a very rare thing when we are not able to do that now, but sometimes it cannot be done and then we must resort to the use of the scleral puncture.

One kind of case that is likely is the case in which the foreign body is extremely small, and, consequently, in the magnetic arc the magnetic pull is very weak; consequently, it doesn't draw it out through the anterior chamber.

We are not losing sight in as many of those cases where we do a scleral puncture as we formerly did because it has become impressed upon us that if we can keep these patients lying down for 10 days after, the attachment is not so ready to take place and it also minimizes the disturbance within the vitreous body and adhesions will not take place. This is impressed upon us by the case of a young man who had one of these foreign bodies six or seven years ago and who insisted upon having a general anesthetic given. We gave him a general anesthetic of ether, and the day following he had ether pneumonia and was very ill; he was in bed over eight weeks. He forgot all about the eye and when he got up the eye was perfect and has remained perfect to the present day.

We have felt from that experience that the ill effects of the puncture might have been minimized by keeping the patient on his back for 10 days or two weeks after the operation.

I am going to show you a thing of historic interest. This is one of the earliest treasures I have in the treatment of intra-ocular foreign bodies. Then I am going to show you my most modern treasures.

This is a picture of an X-ray taken in the early part of 1879. You will remember that was probably 14 or 15 months after Roentgen gave his monograph to the world on the X-ray in 1895. This X-ray was taken before there was an

X-ray expert in Michigan. There may have been an expert some place in America, but there was no X-ray expert in the medical profession in Michigan when that picture was taken. It was taken by one of those curious fellows obsessed with the X-ray and the idea that electricity governs all things, even life; that life is dependent on electricity, and still he was an X-ray enthusiast. He lived out at the county house at Eloise, not as an inmate, and he had one of these static machines. As soon as he found out about the X-ray, he got one of these tubes and this is the picture that was taken at that time, many years ago. You can see the foreign body. Of course that was long before there was such a thing known as localization, long before Sweet's chart was ever thought of, and we are fortunate in getting this thing out by finding an incision and taking it out by a small hand magnet. That is my oldest treasure in this work.

Now I am going to show you my newest one, one that I think has done a great deal to make the work of extraction of foreign bodies more precise, more easy and better gotten at, and that is the Ring magnet which has displaced in our work the ordinary giant magnet or the magnet of Cobb, or the Victor magnet that is used in this country. This magnet perhaps does not give you quite as strong a pull as some of the larger magnets, but it certainly gives you the greatest amount of illumination of your field and the field of illumination is as good as it is during cataract operation and it gives you absolute control of the direction of your magnet pull.

The counterweight here is lowered over the head of the patient. The patient's head sticks up through the ring and then in that position the various pencils are introduced through the magnet arc and through those pencils to get the magnet pull. If you wish to convert your magnet into a giant magnet of the ordinary type, this can be used, but these are hand instruments and are held in the magnetic arc in front of the eye; the magnetic pull is directly up through the long axis of this pencil and under the most perfect illumination you can direct and vary the magnetic pull any degree and amount that you may wish.

CLINICAL ASPECTS OF LARYNGEAL CANCER*

A. C. FURSTENBERG, M. D.

ANN ARBOR, MICHIGAN

Since the earliest days of medical science the cancer problem has assumed an important role in progressive medicine. The medical scientists endowed with persistent enthusiasm have struggled to bring to life new facts concerning this malady, while the clinician grasping each new theory has put forth an inexhaustible effort to combat the disease. To most of us the sum and total of this toil appears to be of little value when estimated in terms of real service to our patients for we have frequently watched our earnest and well directed efforts ruthlessly cut by malignant advance

and in the face of numerous failures have lost our desire to continue any longer as eager experimentalists. To one endowed with a practical sense of value however comes the feeling that within the last decade research and experimentation have brought forth certain measures which occasionally tend to control, if not actually eradicate malignant disease.

It is doubtful if the laryngologists as a whole have kept pace with medical and surgical progress as regards malignant disease. They have long realized the serious nature of cancer and the hazards attending its treatment and have passed their cases on to the X-ray or radium expert, that they might give their attention to phases of the specialty productive of more satisfying results.

The writer realizes that the concrete achievement of this paper fails to disclose any new discoveries. Its only justification perhaps lies in the fact that it brings before you an old subject of no little importance to the laryngologist with clinical data which may be of some service in the diagnosis and rational treatment of laryngeal cancer.

References to the subject and the statistics herein compiled are made from a careful analysis of 100 consecutive cases of cancer of the larynx examined in the Department of Otolaryngology, University Hospital.

In the matter of etiology we are without scientific facts. The postulations or irritative stimuli such as chronic inflammations, as well as hereditary influences are noted in nearly every treatise on malignant disease but after years of diligent research they still remain etiological factors in theory only. Social standing bears little relation to its occurrence since it is as frequently seen in those enjoying ideal conditions in life as in the poor.

The age incidence is similar to that of carcinomata occurring in other parts of the body. It is more common after the age of 40. In our series 75 per cent occurred between the ages of 50 and 65. The youngest patient was 29 and the oldest 84.

From the standpoint of sex incidence it is a noteworthy fact that of 100 cases studied, malignant disease of the larynx was observed in but 14 females. In our experience laryngeal carcinoma has been about seven times as prevalent in males as in females.

Symptomatology needs but brief mention. Altered voice is no doubt the earliest symptoms. Its presence depends upon the

*Read at Annual Meeting, September, 1926.

location and extent of the lesion. A new growth involving the supra or infra-glottic regions may attain considerable size before arousing suspicion that the larynx is the seat of a disease process. When hoarseness does appear, its insidious development an common occurrence in practically all forms of laryngeal disease gives but little warning of the serious nature of the lesion present. It is an interesting fact that in our series of cases, 80 per cent of the patients appeared for examination six months or more after the initial symptom—hoarseness. Fifteen per cent sought advice in the fourth or fifth month of their illness but in not a single instance could we discover that the patient had consulted a laryngologist until more than two months had elapsed since the onset of laryngeal symptoms. It is obvious therefore that in rapidly proliferating neoplasms of the larynx the lesion has already assumed serious proportions when the first laryngeal examination is made. Pain referred to the pharynx or ear occurred only in those cases where a mass of a considerable size with oedema and infiltration of the surrounding tissues was discovered. Purulent and blood stained expectoration, dyspnoea, and dysphagia appeared as late symptoms of the disease. Seventy per cent of our series presented a number of the latter symptoms: evidence that they were in extremis and beyond surgical relief.

Metastasis occurred as a late development in the cases studied. Only 12 per cent revealed palpable cervical glands which were considered clinical evidence of metastasis. Radiographs of the chest were taken in 10 cases where it was believed that metastasis had taken place on account of the patient's extreme condition but in only two instances were pulmonary carcinoma found. Six autopsies were performed. Three patients died of bronchopneumonia and lung abscess and were free from metastasis. One showed metastasis to the deep cervical lymph nodes of the anterior chain and in another case both the cervical glands and the lungs were the seat of malignant invasion. One post mortem revealed a malignancy of the prostate gland as well as of the larynx but microscopical examination of the new growths demonstrated that the neoplasm in the prostate was a primary adenocarcinoma while that of the larynx was a primary squamous cell carcinoma each developing independently of the other. Clinical observations as well as post mortem

examinations would seem to substantiate the opinion that metastasis is usually a late development in the course of malignant neoplasms of the larynx. If this is true the urgent need of the day is an early diagnosis and a surgical technique that will completely dispose of the primary focus.

The diagnosis of laryngeal cancer is not always simple. It is not infrequently mistaken for other ulcerative processes within the larynx notably tuberculosis and syphilis although a thorough clinical study of the case in question usually reveals the true identity of the lesion. It is a noteworthy fact however that syphilis and cancer of the larynx may occur simultaneously for there is plenty of clinical as well as pathological evidence in support of the fact that malignant degeneration occasionally develops on a gummatous base. Three cases in our series showed on microscopical examination a tertiary Lues combined with a squamous cell carcinoma of the larynx. It must be remembered too that a pathological examination does not always clear the diagnosis. When the tissue submitted included only the superficial parts of the lesion and fails to contain its mucous membrane attachment the pathologists may find only histological evidence of a papilloma and report no signs of cancer present. In the writer's experience this error has occurred often enough to convince him that a negative report from the pathologist does not relieve the laryngologist of further responsibility in the case. The presence of suspicious clinical signs of malignancy should serve to leave the diagnosis an unsolved problem deserving of further study. A piece of tissue taken from the periphery of the lesion which includes its attachment to mucous membrane is likely to reveal under the microscope the true nature of the new growth.

As previously stated 70 per cent of our patients were the victims of far advanced laryngeal cancer. They were beyond the reach of surgical interference and hopelessly lost. Apparently a large proportion of these patients did not receive a correct diagnosis or failed to comprehend the seriousness of their illness until late manifestations of the disease appeared. Others had received diligent anti-syphilitic treatment over a long period of time, while another equally unfortunate group seeking conservative measures had placed their confidence in radiant energy or widely advertised serums only to despair in the late stages of malignant disease.

TREATMENT

The present unsatisfactory and unsettled knowledge of the treatment of cancer precludes the possibility of stating any definite rules referable to the therapeutic measures to be employed when the larynx is the seat of malignant change. There is a diversity of opinion among eminent laryngologists but they probably agree on one premise, namely that cancer without metastasis is controlled for an indefinite time or possibly cured when the primary lesion is entirely removed. If this is an accepted opinion, then how may such be accomplished? On the available methods of treatment which one will we employ? The answer to this question is entirely dependent upon the character of the lesion in question. Is it a large fungoid mass deeply infiltrating the submucosa and perichondrium, or is it a small circumscribed lesion definitely limited to the superficial tissues and not advancing into the deeper structures of the larynx. Is it distinctly visible on or above the vocal cords or is it situated in the subglottic region more or less indistinct in the reflected image of the larynx in the mirror. These are some of the very obvious questions which necessarily confront the laryngologist when he is to pass judgment on the method of attack. Laryngeal cancer may occasionally assume the character of an epithelioma similar to that found on the skin of the face or other cutaneous surfaces of the body. It may be of small proportions, slow growing, definitely limited to the superficial tissues and free from extensive infiltration. When such a lesion exists and is readily accessible from above it is reasonable to assume that it may be successfully eradicated by direct or indirect laryngoscopy with biting forceps and cautery. Perhaps too this type of lesion lends itself to destruction by radiant energy although in the writer's experience X-ray and radium treatment of laryngeal cancer has been very discouraging. It is true that radium treatment enjoys enthusiastic support in many quarters but the writer has yet to see a single case of laryngeal cancer cured by radiant energy alone. Most of us can bear witness to the fact that small malignant lesions of the larynx have been successfully destroyed in a few instances with laryngeal forceps and cautery by direct or indirect laryngoscopy. When the diagnosis is made early and the lesion is small and definitely confined to the superficial tissues, it is reasonable to expect that the biting forceps, cautery, diathermy, one or all of them may oc-

asionally destroy the entire new growth and render a cure. But how are we to know when we are dealing with such a lesion? This is the all important question and one frequently difficult to answer. Here again I believe we must return to the methodical methods of practice and rely entirely upon the clinical behavior of the neoplasm to determine whether or not radical or conservative interference is necessary. Little can be gained from a microscopical study of cell type. If the pathologist can give us information referable to the extent of infiltration his report is of much value but to place great confidence in an analysis of cell type may lead to an error in judgment. Repeated observations and a careful study of clinical behavior is in the writer's opinion the most important guide in the selection of the method of attack.

Once satisfied that we are dealing with a laryngeal neoplasm that demands radical surgical interference we have at our disposal the choice of two procedures, thyrotomy with submucous resection of the tissue involved or laryngectomy. While the former operation has the enthusiastic support of several laryngologists it has not been productive of satisfactory results in our hands. One has only to study the microscopical section of a rapidly proliferating cancer of the larynx with its far reaching invasion of perichondrium to understand the difficulties involved in an attempt to strip the cartilage free from every vestige of cancer. Following thyrotomy and extensive resection of the intralaryngeal tissues exuberant granulations may fill the larynx which if converted into fibrous connective tissue forms a complete stenosis. When such a process does occur the larynx is rendered a non-functioning organ and the surgeon left with no assurance whatsoever that the malignant process has been entirely eradicated.

Thyrotomy or laryngofissure is an operation commonly recommended for those cases of laryngeal cancer in which not more than the anterior one-half of one vocal cord is involved. It is not a procedure of choice when the arytenoid region or the posterior extremity of the cord is the site of the lesion. Neither is it employed when opposing cord surfaces are affected or when the infiltration has extended into the anterior commissure. No doubt small superficial lesions definitely limited to the anterior one-half of one vocal cord and not infiltrating the perichondrium can be successfully removed by this method. Nevertheless it is reasonable

to assume and in fact has been demonstrated that this type of lesion lends itself to complete destruction by the more conservative methods above mentioned. If in a given case it is necessary to remove all the perichondrium from the thyroid cartilage on one side, then the operator is placing unwarranted confidence in the submucous resection of the larynx for such an accomplishment is practically impossible. The perichondrium does not strip with ease like that of the costal or septal cartilages for example, on the contrary it is firmly attached to the thyroid cartilage and after a most painstaking dissection there still remains a roughened surface with scattered patches of fibrous tissue any of which may harbor nests of cancer cells. To the writer it would seem less speculative and more in keeping with good judgment to completely extirpate the larynx in those cases where there is clinical or pathological evidence that the neoplasm has invaded the deeper structures. By such a method alone can the surgeon have reasonable assurance that every ramification of the new growth has been removed.

The most important contraindication to the laryngectomy is malignant metastasis. Several laryngologists have emphasized with force the crying need of careful metabolic estimations, functional tests of the kidneys, cardio-vascular examinations, etc. and in the face of abnormal findings have advised against the laryngectomy. It is obviously unwise to operate upon the patient who is so nutritionally impoverished or constitutionally undermined that the mere administration of an anaesthetic is a grave risk to his life but too much importance must not be given to those constitutional diseases which are so frequently the more or less normal affects of advancing years. The general surgeon does not expect all of his gall bladder and prostrate patients to have normal cardio-vascular-renal systems and metabolic rates, neither should the laryngologist insist upon such ideal conditions when dealing with so grave a malady as laryngeal cancer. When the patient's condition will tolerate any major surgical insult he is by the same token a good risk for laryngectomy.

The technique does not differ in many respects from that employed by Keen, Jackson, McKenty and others. We have adopted the general underlying surgical principles which are practically the same in all methods, making here and there a few departures from the general rules

when such seemed to fulfill the requirements in the given case.

The entire operation was performed under local anesthesia. In this the technique differed from the usual method employed which calls for a local anaesthetic in the soft tissue dissection and ether anaesthesia when the larynx itself is extirpated. Complete removal of the larynx under local anaesthesia has certain obvious advantages in that there is less danger of post-operative aspiration pneumonia and little likelihood of troublesome vomiting occurring when patient is reacting. A solution of apothosin one per cent, potassium sulphate two per cent, calcium chloride two per cent is used freely, in the soft tissues of the neck with both superficial and deep injections. Two to three ounces of the solution are used in order to thoroughly infiltrate all of the soft tissue within the field of operation.

An incision is made in the median line of the neck extending from the hyoid bone down to the suprasternal notch. A transverse incision is made at the upper end of the verticle one. It may be only necessary to carry the latter though the skin and soft tissues down to the superficial muscles in order to secure retraction of the wound margins and adequate exposure of the field of operation. The soft structures are then freed from the lateral wall of the larynx beginning above at the thyrohyoid membrane and extending down to the third or fourth ring of the trachea. The dissection is made as closely as possible to the larynx and trachea.

The larynx is then severed from the trachea and the stump of the latter brought forward and securely sutured with several deep retention sutures and many smaller interrupted ones to the skin of the neck. Close approximation of tracheal walls and skin is an ideal to be accomplished. There is enough relaxation of the oesophagus to permit of the trachea being anchored to the skin in this manner without dissecting the latter free from the anterior oesophageal wall. The avoidance of separation of trachea and oesophagus would seem to obviate the danger of infection descending between these two structures into the mediastinum although the stump must be firmly fastened to the skin since it shows a great tendency to retract later into the depths of the wound. It is obvious that such an accident would defeat one of the most important surgical principles of the operation, namely the prevention of flow of secretions downward into the lower respiratory tract. The

larynx is now drawn forward and upward and with a blunt dissector and finger, freed from the anterior wall of the oesophagus. Care should be taken not to buttonhole the oesophagus during this process. The superior horns of the thyroid cartilage are cut with scissors, a pack placed into the hypo pharynx through an incision in the thyrohyoid membrane and the larynx lifted out of the neck.

With the larynx removed one finds a V-shaped rent in the upper part of the anterior oesophageal wall which should be carefully closed with two lines of sutures, one of silk through the mucous membrane and submucosa buried by a second of catgut through the musclederis. A similar line of sutures unites the anterior lip of the oesophagus to the free edge of the anterior wall of the pharynx. The skin incision is then closed by one large mattress suture placed at the junction of the transverse and verticle incisions together with the sutures necessary to close a part of the former. A single piece of perforated rubber tubing serving as a drain is placed in the wound with ends protruding through either extremity of the transverse incision.

The lower part of the wound is not closed but left widely open with one or two iodoform packs inserted. This would seem to have some points of advantage in that part of the operative field in which infection is destined to occur is adequately drained and left accessible to cleansing measures at all times. In the healing process which follows there is a natural tendency for this wound to close spontaneously or it can be closed later when the opening into hypo-pharynx has sealed and infection is no longer active.

Too much emphasis cannot be laid on the importance of careful post-operative attention. Preparation is made to combat shock and the patient is placed in bed, with lower extremities elevated and shoulders lowered for the first 24 hours after operation. The second day less elevation is maintained and as soon as possible the patient is raised into a semi-reclining posture and encouraged to change his position frequently.

Every possible care should be taken to prevent the drainage of secretions into the trachea. Two special nurses trained in trachial work are in attendance with a suction apparatus available every inspiration is guarded against the possible introduction of discharges into the lower air passages. Narcotics are withheld in order that nothing may interfere with the normal protective reflexes of the trachea.

The dressings wrung out in iodoform emulsion are changed every three or four hours and the tracheal cannula is wound in conical form with bismuth subnitrate paste tape and firmly introduced into the trachea and secretions may not drain along the walls of the tube into the lower air passages.

The patient is fed through a rubber catheter introduced into the oesophagus through the nose and every effort is made to keep his nutritional requirements adequately fulfilled.

As has already been mentioned there is a natural tendency for the lower part of the wound to close spontaneously. When this process is unduly delayed the skin margins may be freshened and one or two mattress sutures of silk worn gut or silver wire can be used to bring the wound edges in apposition after the infection has resolved.

LIVER FUNCTION TESTS IN CHILDREN*

SAMUEL J. LEVIN, M. B. (Tor.)**

ANN ARBOR, MICHIGAN

The liver is an organ of manifold functions, any one of which may be damaged without necessarily causing insufficiency of the hepatic functions. A number of tests have been evolved, each particularly concerned with one phase of the liver's activity.

The importance of the liver in carbohydrate metabolism has been shown by Mann and his associates¹. Following total extirpation of the liver in dogs a gradual and progressive fall in blood sugar occurs, resulting ultimately in the group of symptoms known as the "hypoglycemic reaction."

The liver converts into glycogen the monosaccharides absorbed from the intestine. It holds the glycogen as such until the tissues require sugar, when it reconverts the glycogen into glucose and water. All monosaccharides are not taken up with equal facility by the liver.

Laevulose is very rapidly taken up by the liver. It is the only sugar in ordinary use which, following ingestion by normal subjects, does not cause an appreciable rise in blood sugar. MacLean and De Wesselow² following the work of Sachs³,

*Read at the Annual Meeting, September, 1926.

**From Department of Pediatrics and Contagious Diseases, University Hospital, Ann Arbor. Service Dr. D. M. Cowie, and Pediatrics Department, Mt. Sinai Hospital, New York, Service of Dr. Bela Schick.

Straus⁴, Bergmark⁵, and Isaac⁶, began to use laevulose as a test for hepatic function. When a normal subject is given a "loading dose" of laevulose, the blood sugar remains low and the "curve" is practically flat. If, however, hepatic insufficiency is present, the blood sugar following the ingestion of laevulose rises and remains elevated for more than two hours. This observation has been confirmed by Bodansky⁷ on dogs and by Spence and Brett⁸, Covell⁹, and Tallerman¹⁰ on human subjects. The laevulose tolerance test has since been widely used in the estimation of hepatic efficiency. The clinical application of this test is, however, difficult because numerous other factors such as pituitary, pancreatic, and other endocrines must be considered in those cases in which the ability of the organism to metabolize carbohydrate is reduced.

Tallerman¹¹ has applied the laevulose test to a number of children suffering from ketosis and has shown that there is a derangement of carbohydrate metabolism in a majority of these cases accompanied by hepatic insufficiency, as shown by the test.

In carrying out the laevulose tolerance test on children, we gave 1.5 gm. of the sugar per Kilo dissolved in 100 cc. of water. The amount of laevulose given was usually between 25 and 40 gms. The fasting blood sugar was estimated and blood sugars again determined one-half, one and two hours afterwards. A modified micro-chemical Folin-Wu method was used¹².

The effect of the liver on protein metabolism has been studied in detail by numerous observers. It is known to be the seat of intermediary nitrogen metabolism. The amino acids brought to it by the portal vein are converted into urea through the stage of ammonium carbonate. The inability of the damaged liver to form urea from amino acids has been shown by Falk and Saxl¹³. They fed glycocoll to animals and found that it was excreted in the urine unchanged in those animals whose livers had been previously damaged. Bollman, Mann, and Magath¹⁴ found that after extirpation of the liver in dogs, a decrease in blood urea occurred. Rowntree, Marshall and Chesney¹⁵ showed that in many cases of liver disturbance, there was a lowering of the blood urea.

Based on the fact that the conversion of amino acids into urea depends upon the normal functioning of the liver, Cohen and Levin¹⁶ have devised a test for determining the ability of the liver to form urea. This test consists of feeding a child a protein

meal containing 1 gm. of nitrogen per Kilo. The blood urea, fasting and four hours after a protein meal, is determined. In a series of normal children it was found that the blood urea rose from an average fasting level of 11 mg. per 100 cc. to 18 or 20 mg. per 100 cc. The failure of the blood urea to rise at least 50 per cent of the fasting level, indicated to them that there was a disturbance in the urea-producing mechanism of the liver.

The protein meal given consisted entirely of the brown meat of chicken, each 5 gm. of which contains 1 gm. of nitrogen.

In discussing the protein metabolism of the liver, the Hemoclastic Crisis of Widal should be mentioned¹⁷. This is a test for the proteopexic activity of the liver based on the theory that the so-called post-prandial leucocytosis is dependent upon a normal liver parenchyma. In the presence of hepatic disease a leucopenia rather than a leucocytosis should follow a protein meal. Numerous observers have not found this test to be sufficiently constant to be of clinical value. For this reason we omitted this test in our work.

Numerous dye substances have been used to test hepatic efficiency. These tests are based upon the fact that the liver is an excretory organ and will excrete certain dyes after their injection into the blood stream. Several dyes have been used, chief of which are methylene blue, Congo red, indigo carmen; azorubin s., rose bengal, phenoltetrachlorphthalein and Bromsulphalein. The last two dyes have received most attention. In 1909 Rowntree and Abel¹⁸ observed that when phenoltetrachlorphthalein was injected into the circulation, it was eliminated solely by the liver. Rowntree attempted to estimate liver function after injection of the dye, by determining the amount of dye which could be removed with the duodenal tube. Rosenthal¹⁹ determined the rate at which the dye leaves the blood stream. One hour following the injection of 5 mg. per Kilo in normal subjects, there is usually none or only a faint trace of the dye in the blood serum. In cases of liver damage, Rosenthal and numerous observers have shown that there is an appreciable amount of dye unabsorbed by the liver. The phenoltetrachlorphthalein test was followed in many instances by a general reaction, and thrombosis at the site of injection. The dye is highly irritant and requires considerable dilution with normal saline. To overcome these disadvantages, Rosenthal and White²⁰⁻²¹ have recently introduced Bromsulphalein. This dye is non-irritat-

ing, requires no dilution, and produces little, if any, general disturbance. Rosenthal found that in normal rabbits 85 per cent of the Bromsulphalein injected intravenously was excreted in the bile within one hour. Following extirpation of the liver in rabbits the dye is retained almost in toto during the early period following injection.

In our work we first used the phenoltetrachlorophthalein test but because of the occurrence of thromboses locally and, in one instance, the occurrence of haemoptysis, we began to use Bromsulphalein as soon as it was available. The Bromsulphalein test was carried out by injecting intravenously 2 mgs. of the dye per Kilo, without previous dilution. The sample of blood is removed in one-half hour, clear serum obtained, and placed in two small test tubes. Two drops of 10 per cent sodium hydroxide is placed in one tube and one drop of 5 per cent hydrochloric acid in the other. Any dye remaining in the serum becomes at once apparent in the presence of the alkali. The colored serum is compared with suitable standards and the amount of dye remaining in the serum is thus readily determined.*

The formation and excretion of bile pigment are characteristic activities of the liver. The liver, however, is not essential to bilirubin formation²². A high percentage is formed in the reticulo-endothelial system outside the liver. The liver is, however, essential to its excretion. measure the bilirubin content of the serum. It is the sole excretory organ in health.

Various attempts have been made to The simplest methods have been based on the theory that the intensity of the serum color is an index of the quantity of bilirubin, since the latter is the chief pigment in the serum. A colorimetric comparison using a 1:100 solution of potassium bichromate as a standard has been widely used, the readings being termed the icteric index. In general, the values for normal serum have been found below 5,^{23, 24, 25, 26}.

This method is quite satisfactory in following the variations in frank icterus but difficult of application in conditions in which the serum bilirubin is only slightly increased. Confusion may also be caused through the presence of xanthophyll and carotinoid pigments in the blood.

Attempts have been made to produce the green or blue oxidation products of bile pigment under conditions permitting quan-

titative estimation of the color developed. These methods have been based on the well known Gmelin test for bile pigment which consists of adding nitric acid to the bile containing medium. These tests were not very successful. It remained for Van Den Bergh²⁷ to evolve a quantitative test for bilirubin which has since been widely used.

The Van Den Bergh test depend upon the addition of Ehrlich's diazo reagent to blood serum and estimating the depth of the color developed. The immediate development of a violet color indicates a "direct" reaction. The proteins are then precipitated with alcohol. The development of a rose-pink color after the addition of alcohol indicates an "indirect" action. Van Den Bergh claimed that the "direct" reaction means obstructive jaundice and the "indirect" reaction means hemolytic jaundice. Although not all observers are agreed on the value of the Van Den Bergh Test in this differentiation, the value of the test for quantitative estimation of bilirubin in serum is generally accepted. The quantitative test is carried out by comparing the rose-pink color developed with a standard preferably made pure bilirubin. The normal readings vary from 5 to 2 mg. of bilirubin to 100 cc. of serum.

The relation of the liver to urobilin formation seems to have been finally established by Elman and McMaster²⁸. These investigators showed by animal experiments that the urobilin in the form of its precursor, urobilinogen, is formed in the intestinal tract from bile pigments and is carried by the portal blood to the liver which normally excretes it in the bile. The presence of urobilin in the urine, according to the present evidence, is an indication of the inability of the liver to take up the urobilin brought to it from the intestine. It is then excreted in the urine. Wallace and Diamond²⁹ have investigated the presence of urobilinuria in cases of liver disturbance and have found it a valuable test of liver function. They obtained a quantitative estimation of urobilin in the urine by adding to it paradimethylaminocobenzaldehyde in hydrochloric acid solution. The resultant pink color is diluted until it disappears, the result being expressed in the number of dilutions required. They found that in many cases of liver disturbance there was an increase in the urobilin in the urine.

In the series of cases investigated by us, urobilin was estimated quantitatively by means of a modified Joyce test. This depends upon the development of a fluore-

*The dye in sterile ampoules and standards are obtainable from Hynson, Westcott and Dunning, Baltimore, Md.

scent color when a zinc acetate solution in alcohol is added to the urine containing one drop of tincture of iodine. The mixture is then diluted until the fluorescent color disappears. Each liter of dilution is multiplied by 8.5, the result being the milligrams of urobilin per 100 cc. Normally the amount of urobilin excreted in the urine in 24 hours varies between 20 and 30 milligrams.

The tests described above, namely, laevulose tolerance, protein meal, dye absorption, icteric index and Van Den Bergh tests and the estimation of urobilin in the urine, were all carried out in parallel on a number of children. Many of these showed no evidence of liver disturbance except for a moderate degree of liver enlargement. In this group were a number of well compensated cardiac children and patients convalescing from pneumonia. The tests were also carried out on two cases of Hodgkin's disease with large livers and on a few cases of catarrhal jaundice. Because of the infrequency of marked liver disturbance in children our work was chiefly confined to those cases showing as sole evidence of liver disturbance only slight or moderate liver enlargement.

Disturbance of one type of physiological activity does not necessarily indicate disturbance of others. In many cases only one or two of the tests were positive. In the cases presenting only enlarged livers, occurring in cardiacs, following pneumonia and in Hodgkin's disease, the protein test alone, as a rule, was positive. In no case was the protein test negative in the face of any other positive test. During convalescence from pneumonia and during functional improvement in the cardiac cases the protein test became normal. It seemed to us that the return to normal of the protein test closely paralleled the improvement of the exercise tolerance in the cardiac children.

The icteric index and Van Den Bergh test frequently gave evidence of liver damage before any of the other tests except the protein meal test which seemed to us the most sensitive. In all the cases in which the dye test was positive we were able to diagnose liver damage clinically. The dye was always retained in the blood when the serum bilirubin was high. With the development of jaundice an increase in the failure of dye absorption by the liver occurred. The jaundice per se undoubtedly causes the liver damage.

Increase in urobilin in the urine seemed to approximately parallel similar changes in the serum bilirubin.

The laevulose tolerance test seemed to us to be the least sensitive. It was usually positive in well marked cases of liver disturbance showing both enlarged liver and jaundice.

It would seem that laboratory methods are unnecessary for the diagnosis of well marked cases of liver disturbance. In questionable cases of liver disturbance, however, the protein meal test is apparently a valuable aid in the diagnosis and in the estimation of the degree of damage.

DISCUSSION

Dr. B. Raymond Hoobler, (Detroit): I think Dr. Levin's finding in relation to cardiac cases is very interesting. You speak of the liver damages in those instances. Could simple congestion account for the conditions that you found in those cardiac cases, or do you think there was some actual damage to the peritoneum? Could these liver tests be used in attempting to estimate the gravity or the prognosis of cardiac function return?

We are handling a large number of cardiac cases in the Children's Hospital. We have a cardiac clinic and probably now have 500 to 600 cardiac cases. We take the acute cases to the hospital and the others to the convalescent home. We have nurses who visit them in their homes. Anything we can get in the way of coming to some definite conclusions as to how much exercise or liberties we can allow these cardiac patients will be of great help.

Dr. David J. Levy, (Detroit): I would like to ask a question. He states that levulose is the only sugar which can be employed in liver function tests, in that it doesn't produce hypoglycemia. I wonder if pentose does not act in the same way. I am reporting a case of pentosuria. We find the pentose constantly in the urine. The pentose can be tested, but there is no disturbance in the urine. I am wondering beyond what point 2.1 per cent pentose might be administered without causing this disturbance as being characteristic of levulose.

I want to ask further if, in the series of cases investigated, any pentosuria cases were involved, and if he thinks there might be a worth-while point of attack in the study of a case from the standpoint of liver function.

Chairman Cowie: Is there any further discussion on Dr. Levin's paper? The status of the liver function test, as you all know, for some time has been quite up in the air. Most of the tests that have been worked out have failed to be what they hoped to be.

I was very much interested in this test of Dr. Levin's as it seemed to me to be so simple and quite analogous to another food test which we have been using for some time, the glucose test. I hope something will come out of the work. Dr. Levin is out at the university with me now.

Dr. Samuel J. Levin: In regard to cardiac children, we wouldn't think that this test would be very accurate in a case showing any signs of decomposition because possibly food substance might be absorbed, but in a case well compensated, as I stated before, the power of the patient to form this substance, from an osmosis to urea, seems to return with exercise tolerance.

Whether it is going to be of value in determin-

ing whether the patient should be allowed the increased tolerance, I do not know. It may take more observation. We could see that the patient was able to sit up without getting short of breath and at times able to stand up, and the test was normal. At the time we made the observations we thought it would be very useful and it might be of value to us to determine whether a patient should be allowed to be up and around. It will be very interesting to see what others will get with this test.

As far as pentose is concerned, I have not run into anything which refers to any sugar but levulose as being a sugar which does not cause hyperglycemia. I have had no experience personally with pentose.

BIBLIOGRAPHY

1. Mann, F. C. and Magath, T. B.: Arch. Int. Med. 30:73-84, 1922.
2. MacLean, H. and de Wesselow, O. L. V.: Quart. J. Med., 14:103-119, 1920.
3. Sachs, Hans.: Ztschr. f. klin. Med.; 38:87-126, 1899.
4. Strauss, H.: Deutsch. Med. Wchnschr.; 27:757-759, 1901.
5. Bergmark: Jahrb. f. Kinderh.; 80:373-385, 1914.
6. Isaac, S.: Med. Klin.; 16:1207-1210, 1920.
7. Bodansky, M.: J. Biol. Chem.; 58:514-522, 1923.
8. Spence, J. C. and Brett, P. C.: Lancet; 2:1362-1366, 1921.
9. Covell, G.: Guy's Hosp. Rep.; 73:354-367, 1923.
10. Tallerman, K. H.: Quart. J. Med.; 17:37-52, 1923.
11. Tallerman, K. H.: Amer. Jour. Dig. Child.; 30:476-582, 1925.
12. Kuttner, Th.: A Modified Micro-chemical Folin-Wu Method for Blood Sugar, In press.
13. Falk and Saxl: Stschr. f. klin. Med.; 73:131-325, 1919.
14. Bollman, J. L., Mann, F. C. and Magath, T. B.: Amer. Jour. Physiol., 69:370-392, 1924.
15. Rowntree, L. G., Marshall, E. K., Jr., and Chesney, A. M.: J. A. M. A., 63:1533-1537, 1914.
Tr. A. Am. Phys., 29:586-625, 1914.
16. Cohen, P. and Levin, S. J.: A Protein Test for Liver Function, In Press.
17. Widai, F., Abrami, P., and Iancovesco, N.: Presse Med., 28:893, 1920.
18. Abel, J. J., and Rowntree, L. G.: J. Pharm. and Exper. Ther., 1:231-264, 1909.
19. Rosenthal, S. M.: J. A. M. A., 79:2151, 1922.
20. Rosenthal, S. M., and White, E. C.: J. Pharm. and Exper. Ther., 24:265, 1924.
21. Rosenthal, S. M., and White, E. C.: J.A.M.A., 84:1112-1114, 1925.
22. Mann, F. C., Bollman, J. L., and Magath, T. B.: Amer. Jour. Physiol., 69:211, 1924.
23. Blankenhorn, M. A.: Arch. Int. Med., 27:131-134, 1921.
24. Meulengracht, E., Arch. f. Klin. Med., 137-38, 1921., Abstr. J. A. M. A., 77:1141, 1921.
25. Stetten, D.: Ann. Surg., 76:191-200, 1922.
26. Bernheim, Alice R.: J. A. M. A., 82:291, 1924.
27. Van Den Bergh, A. A. H.: Presse Med., 29:441-443, 1921, Abstr. J. A. M. A., 77:235, 1921.
28. Elman, R., and McMaster, P. D.: J. Exp. Med., 42:1-122, 1925.
29. Wallace, G. B., and Diamond, J. S.: Arch. Int. Med., 35:698-725, 1925.

THE TREATMENT OF FRACTURES OF THE OS CALCIS*

ROBERT V. FUNSTON, M. D.
DETROIT, MICHIGAN

Fractures of the os calcis constitute about three-tenths per cent of all fractures occurring in the larger cities of the United

States. The disability following these fractures has been a matter of considerable concern to insurance companies, who usually fall heir to them. With the improvement in the care of fractures generally, there has been little progress in the care of this type, and the allotted disability still averages from 12 to 18 months. The more severe cases are permanently disabled. They cannot continue their former occupations, which because of their hazardous nature are often particularly remunerative.

So common are fractures of the os calcis in large industrial centers that it is possible in the literature to find reports of as many as 50 cases in one series. Nevertheless, the writers of such articles are usually not well satisfied with the results obtained by ordinary methods.

It is interesting to note in the literature and in text books the amount of space allotted and the descriptions of technique given for treatment, during the past 20 years. Scudder in 1903 gives 36 lines to the entire subject. Cotton, in 1924, devotes 22 pages.

Fractures of the os calcis are most often caused by landing on the feet from a fall of 10 feet or more. They are common among telephone line workers, painters and scaffold workers. There is an old rule: "the higher the fall the lower the fracture." This is often true. Fractures elsewhere, as in the arm, sometimes occur from the secondary fall as the feet give way.

The point which I wish particularly to emphasize is the necessity for accuracy of X-ray diagnosis in the first place and correctness of X-ray interpretation following attempted reduction. Cases have come under our observation which were treated by manipulation in excellent hospitals and reported by the X-ray departments as being in good position. The surgeon caring for these cases had evidently justly felt satisfied that the best result was obtained. Yet, in checking them up later it was found that they were either inadequately X-rayed or else important features which cause disability were not observed and reported.

The important causes of latent disability in fractures of the os calcis are:

I. Irritation of the calcaneo-cuboid and calcaneo-astragaloid joints by displaced fragments.

II. Lateral displacement of the fragments causing impingement on tissues and interference with tendon motion.

III. Flat foot and knock ankle deformity causing improper weight bearing.

*Read at the Annual Meeting, September, 1926.

IV Loss of the normal length-of the os calcis by impaction.

To obtain X-rays which will clear these points, plates must be taken in three directions as shown in the lantern slides; i.e., (a) anterior-posterior, (b) lateral and (c) through the os calcis from the rear at a 45° angle.

TREATMENT

Cotton and Wilson in 1908 described the use of the urethral sound passed over the os calcis through small incisions in the skin as means of leverage to restore the position of the posterior fragments. They also advocated the use of a mallet to re-impact the lateral fragments. Tenotomy of the tendo-Achilles was considered by them to be an unsafe procedure. Other authors have used the Steinman pin or ice-tongs as means of applying more permanent downward traction on the posterior fragments.

A technique has gradually been developed and standardized by Dr. A. C. Hall and I, for all fractures of the os calcis with displacement. This procedure, which will be shown in lantern slides along with the results as demonstrated by X-ray, consists in:

I. Allowing the patient to rest four to eight days until the swelling begins to subside, then careful preparation of the skin.

II. Open lengthening of the tendo-Achilles by the sliding method. This is used as a means of avoiding the more dangerous subcutaneous tenotomy.

III. Breaking up of impaction and reduction of displacement of the posterior fragments by use of the number 24 urethral sound passed over the os calcis through small incisions in the skin. To obtain sufficient leverage the patient is turned on his stomach and the toes allowed to reach just over the edge of the table. Counter-pressure in the arch is obtained with a padded wooden board wrapped in sterile dressings and sustained against the surgeon's chest.

IV. The inner side of the foot is placed against a sand bag and the fragments under the outer malleolus impacted with a mallet and rolled bandage.

V. When the restoration seems complete a cast is carefully applied with the foot in slight inversion at a 90 degree angle. The rolled bandage is left carefully in place under and behind the external malleolus to prevent any recurrence of the displacement of the lateral fragments. The cast is undisturbed for four weeks when

the anterior half is removed. At six weeks the feet are removed only for daily motion and heat. At eight weeks the casts are entirely removed and two weeks later weight bearing begun in specially prepared shoes. A small outside upright of steel with an inside T-strap prevents lateral strain while a high arch support of felt prevents strain on the os calcis itself.

The data for this paper is based on the results of over a hundred operated cases. A number of these Dr. Hall and I have done together. My personal series consists of over 30. There has not yet been an infection, so the procedure can scarcely be considered hazardous.

The average disability has been under six months, even though many were of both feet. A number of severe cases have returned to their original work in three and one-half months. If, at the end of six months, function is not complete and weight bearing is painful it is the rule to fuse the calcaneo-cuboid or the calcaneo-astragaloid or both as may be indicated. If there is impingement on the peroneal tendons, this is chiseled away. It is probable that the joints more often than any other factor cause disability, due to traumatic arthritis.

DISCUSSION

Dr. C. S. Clark, (Jackson, Mich): How long after his operation on his average case does he attempt to get the patient back onto his feet in order to carry his own weight?

Dr. Wm. Cassidy, (Detroit, Mich.): There is practically no series of injuries in the Industrial Surgery Division today which gives such a long period of disability as that of fracture of the os calcis. We have seen them up to as high as five years still having pain in the region of the os calcis, in the tarsal joints upon stepping, that is, while they are sitting down they have no disturbance, but the minute you put them on their feet and they attempt to do any work, they complain of pain. Even after fixation of the joint they don't all get well. It is a distressing thing to treat.

Minor injuries at times produce a major amount of symptoms, in certain individuals. Fractures of the os calcis up to the past five years, have been surgically treated; they have been treated in a sort of haphazard, care-free, slipshod way often without immobilization, many times with a little adhesive plaster attachment and a great many times with simply moist dressings or heat, no attempt being made to reimpact the fracture which is badly displaced, the surgeon being afraid to open the foot on account of infection. Today, with the average good surgeon's technic, he should not be any more afraid to open the ankle joint than to open a man's head. All you hear about material causing infection is tommy-rot for the reason that these things do not serve as food for organisms; you read the literature and you think the steel is what produced the bug in the individual who has osteomyelitis.

That is not true. What produces it is the dirty surgeon, the fellow who doesn't stay clean or clean his patient up thoroughly before, or selects the wrong period of time to operate his patient. If you go into a fracture in the first 48 hours, the chances of infection are two to one that they would be in the next 82 hours. You have also got your original trauma. In every individual you must bear in mind that you are operating through a septic field, no matter how sterile the skin is, the skin is still infected, and the less you handle the skin, the less amount of infection you are going to have, and the essential point to realize in all bone work is that bone is a low grade tissue which resists infection badly, it isn't like muscle, it hasn't the protection of the muscles. Bones infect easily, and as a general rule it lasts a long period of time and is hard to get rid of.

The direct proportion of your results will vary with how accurately you approximate your fragments, how carefully you immobilize your fractured bone and how meticulously and consistently you do your after care as regards mobilization later in the way of loosening up the tendons, the muscles, the fascia bands and the joint structures at large, together with education of the mental attitude of the patient.

Every industrial case today comes to you with a mental attitude as a rule that the pain is there and he will lay around month in and month out and often the doctor is at fault in allowing him to do so. He can give him a small job to do and change the mental attitude of the patient, and it seems to me this is one of the fundamental principles the medical profession should take into consideration in the treatment of industrial injuries, for the reason that the whole thing reflects back upon the group as to how much they pay for their daily bread in direct proportion to the number of injuries received and how long they lay around before they go back to work, because the contractor has to add to the cost of production.

It all comes back to you, and there is no reason why this thing can't be gotten together and the medical profession stand on their feet and get these fellows back to work much earlier than they are doing at the present time.

I think Dr. Funston is to be congratulated on bringing this before us, because this is happening day in and day out. It is a constant procession of cripples; these cripples can be improved and should not be allowed to drift around month in and month out, year in and year out, taking money from industrial commissions and the insurance companies, which adds a higher rate to the insurance.

Dr. Robert Funston: I thank the gentlemen for the discussion. In regard to getting the patient back on his feet, that is done after the first eight weeks. In eight weeks they begin weight bearing in a specially prepared shoe with a support under the arch and with an outside upright, inside strap. Practically the entire strain is taken off the os calcis itself when they begin their weight bearing. We try to get them back to some form of work at the end of three months, if they will go. Some of these cases will go quite readily; others we have difficulty with. Many of them don't want to go back to work because they feel when they do they are out of luck for any further compensation. (Applause).

LAST ILLNESS AND DEATH OF WASHINGTON*

WALTER A. WELLS, A. M., M. D., F. A. C. S.

WASHINGTON, D. C.

FROM ORIGINAL ARTICLE IN VIRGINIA MEDICAL MONTHLY JANUARY, 1927.

Of Washington's manner of life there was never until the most recent time but one opinion. His manner of death, however, became immediately after its occurrence the subject of a controversy, which has never been satisfactorily settled in all the hundred and twenty-five years which have since elapsed.

The announcement of his death came as a stunning blow to the country, unprepared by any knowledge of a recent illness. Universally reckoned as a man of tremendous physical vigor, it seemed all the more strange to learn that he died of a simple cold of only forty-eight hours' duration.

The cause and nature of his illness were called into question, and the medical management of the case came in for severe criticism which was aimed only at the physicians in attendance. There have since been added innuendoes inspired by an iconoclasm rampant in certain quarters in the present age, which are intended to reflect upon the character of the great man himself. Fortunately we have the records; for the death as well as the life of Washington have been chronicled with singular exactness to even the minutest details. And if we review these records in the light of now advanced state of medical science, we should in the first place obtain a verification as to their consistency with fact, and, in the second place, arrive at a correct opinion as to the nature of the illness and of the method of treatment.

Besides the published statement of his physicians, there is the circumstantial account of the last days of Washington by his devoted secretary, Col. Tobias Lear. This, written under date of December fourteenth, might be viewed in a sense as a continuation of Washington's own diary; for, as we know, throughout the greater part of his life he wrote down with scrupulous exactness the commonplace occurrences of his daily life, and there is an entry as late as December the thirteenth, probably the last words he

* Read by invitation at the fifty-seventh annual meeting of the Medical Society of Virginia, in Norfolk, October 12-15, 1926.

penned, being the very day before the day of his death.

It will be interesting and at the same time apropos to preface the account of the illness given by Lear, with a transcription of the last entries in Washington's diary:

December 1—Mr. Foot dined here.

December 2—Lord Fairfax, Lady, Daughter and Miss Dennison dined here.

December 3—Mrs. Stuart and Daughter went away after breakfast.

December 4—Morning clear, wind at northwest and mercury at 36. From ten o'clock until two, very little snow; it then cleared and became very mild and pleasant, mercury at 38; wind at north.

December 5—Morning raining and continued to do so moderately through the day with wind southeast; mercury 38 in the morning, and 36 at night.

December 7—Rainy morning with wind at northeast, mercury at 37; afternoon clear and pleasant, wind westerly, mercury 48 at night. Dined at Lord Fairfax's.

December 9—Morning clear and calm; mercury 31, afternoon lowering, mercury at 32 and brisk wind from the southwest. A very large hoar frost this morning.

December 11—But little wind and raining, mercury 44 in the morning; 38 in the night; about nine o'clock the wind shifted to northwest and it caused raining but it continued cloudy. Lord Fairfax, his son Thomas, and Daughter, Mrs. Warner Washington and son Whiting and Mr. John Herbert dined here and returned after dinner.

December 12—Morning cloudy, wind at northeast and mercury at 33. A large circle around the moon last night. About ten o'clock it began to snow, soon after hail and then a settled rain. Mercury at 28 at night.

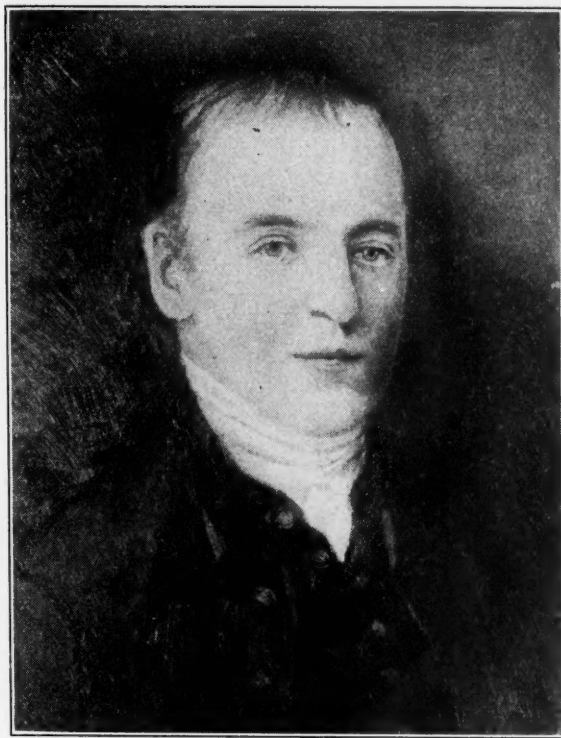
December 13—Morning snowing and about three inches deep, wind at northeast and mercury at 30. Continued snowing until about one o'clock, and about four o'clock it became perfectly clear. Wind at same place not hard. Mercury 28 at night.

Now, according to Colonel Lear, Washington on December 12th was riding about his farm from ten to three o'clock and the weather at this time was bad, "Rain, hail and snow falling alternately with a cold wind."

He observed with regard to the General on his return "that his neck appeared wet and that snow was hanging upon his hair"

and that he came to dinner without changing his dress.

The next day, Friday, the General did not go out as usual, in the forenoon, for he had taken cold and complained of a severe sore throat. He went out, however, in the afternoon to mark some trees which had to be cut down. He had now a "hoarse-



Dr. James Craik

ness which increased in the evening, but he made light of it. He spent the evening reading the papers, and when he met anything interesting, he read it as loud as his hoarseness would permit." On retiring, Colonel Lear suggests that the General take something for his cold, but he answered, "No, you know I never take anything for a cold. Let it go as it came."

On the next day, which was Saturday, at three o'clock in the morning, he told Mrs. Washington that he was very unwell and that he had an ague. It was observed that he could scarcely speak and that he breathed with difficulty. At daybreak, Mr. Lear came in and found the General breathing with difficulty and hardly able to utter a word intelligently.

"A mixture of molasses, vinegar and butter was given, but he could not swallow a drop, and when he attempted, he appeared to be distressed, convulsive and almost suffocated."

Rawlins, the overseer, was sent for at Washington's request to bleed him, and

one pint of blood was taken with no relief. Lear next applied sal volatile to his throat gently with his hand, upon which the patient remarked that the throat was very sore. A piece of flannel dipped in sol volatile was put around his neck and the feet bathed in warm water, all without relief. About eight o'clock, he got up for about two hours, but obtained no relief from the changed position. Doctor Craik arrived shortly after nine o'clock. He applied a blister of cantharides to the throat, took some more blood and prescribed a gargle of vinegar and sage tea. He also ordered vinegar and hot water for steam inhalation. In attempting to use the gargle the patient almost suffocated, and when the gargle came back from the throat some phlegm followed.

At eleven o'clock the bleeding was repeated but the difficulty in swallowing did not improve. In the meantime, Doctor Gustavus Richard Brown, of Port Tobacco, and Doctor Elisha Dick, of Alexandria, had been summoned. Doctor Dick arrived about three o'clock, and Doctor Brown shortly after. The patient was again bled and it was noted that the blood came "slow and thick," but there was no fainting. Calomel and tartar were administered without effect. About half past four o'clock Washington gave directions about his will, and at about five he again tried sitting up but remained so only half an hour. In the course of the afternoon, he appeared to be in great pain and distress from the difficulty in breathing, and frequently changed his position in bed.

About eight o'clock, the physicians applied blister and cataplasms of wheat bran to his legs and feet. The condition remained unchanged until about ten minutes before his decease, when the breathing became easier. He died between ten and eleven.

The following statement by his physician's, Doctors Craik and Dick, published in "*The Times*," of Alexandria, December 19, 1799, was reprinted in the Medical Repository at their request:

"Messrs. J. and D. Westcott,

"Presuming that some account of the late illness and death of General Washington will be generally interesting, and particularly so to the professors and practioners of medicine throughout America, we request you to publish the following statement.

JAMES CRAIK,

ELISHA C. DICK.

"Some time in the night of Friday, the 13th inst., having been exposed to rain on the preceding day, General Washington was attacked with an inflammatory affection of the upper part of the

windpipe, called in technical language, cynanche trachealis. The disease commenced with a violent ague, accompanied with some pain in the upper and fore part of the throat, a sense of stricture in the same part, a cough, and a difficult rather than painful deglutition, which were soon succeeded by fever and a quick and laborious respiration. The necessity of blood-letting suggesting itself to the General, he procured a bleeder in the neighborhood, who took from the arm in the night, twelve or fourteen ounces of blood; he would not by any means be prevailed upon by the family to send for the attending physician till the following morning, who arrived at Mount Vernon at eleven o'clock on Saturday morning. Discovering the case to be highly alarming, and foreseeing the fatal tendency of the disease, two consulting physicians were immediately sent for, who arrived, one at half past three and the other at four in the afternoon. In the interim were employed two copious bleedings; a blister was applied to the part affected, two moderate doses of calomel were given, an injection was administered which operated on the lower intestines, but all without any perceptible advantage, the respiration becoming still more difficult and distressing. Upon the arrival of the first of the consulting physicians, it was agreed, as there were yet no signs of accumulation in the bronchial vessels of the lungs, to try the result of another bleeding, when about thirty-two ounces were drawn, without the smallest apparent alleviation of the disease. Vapours of vinegar and water were frequently inhaled, ten grains of calomel were given, succeeded by repeated doses of emetic tartar, amounting in all to five or six grains, with no other effect than a copious discharge from the bowels. The powers of life seemed now manifestly yielding to the force of the disorder. Blisters were applied to the extremities, together with a cataplasm of bran and vinegar to the throat. Speaking, which was painful from the beginning, now became almost impracticable, respiration grew more and more contracted and imperfect, till half after eleven o'clock on Saturday night, when, retaining the full possession of his intellect, he expired without a struggle.

"He was fully impressed at the beginning of his complaint as well as through every succeeding stage of it, that its conclusion would be fatal, submitting to the several exertions made for his recovery, rather as a duty than from any expectation of their efficacy. He considered the operation of death upon his system as coeval with the disease; and several hours before his decease, after repeated efforts to be understood, succeeded in expressing a desire that he might be permitted to die without interruption.

"During the short period of his illness he economized his time in the arrangement of such few concerns as required his attention, with the utmost serenity, and anticipated his approaching dissolution with every demonstration of that equanimity for which his whole life had been so uniformly and singularly conspicuous.

JAMES CRAIK,

ELISHA C. DICK,

Attending Physician. Consulting Physician.

"The signature of Doctor Gustavus Brown, of Port Tobacco, who attended as consulting physician, on account of the remoteness of his residence from the place, has not been procured to the foregoing."

This statement, we may say, agrees perfectly with the account given by Mr. Lear,

except in some non-essential particulars. Before proceeding to discuss the case, let us, after the correct manner of writing clinical histories, now add what we find out as to the patient's family health history, and of his own previous illnesses, his habits of living and his physical characteristics, all of which are important in arriving at a correct diagnosis and prognosis in this case, as well as in all others.

Family Health History. On his father's side, the Washington's were short lived. The great grandfather, Colonel Washington, died at the age of 54; the grandfather Lawrence died at the age of 37, and the father Augustine, at the age of 49.

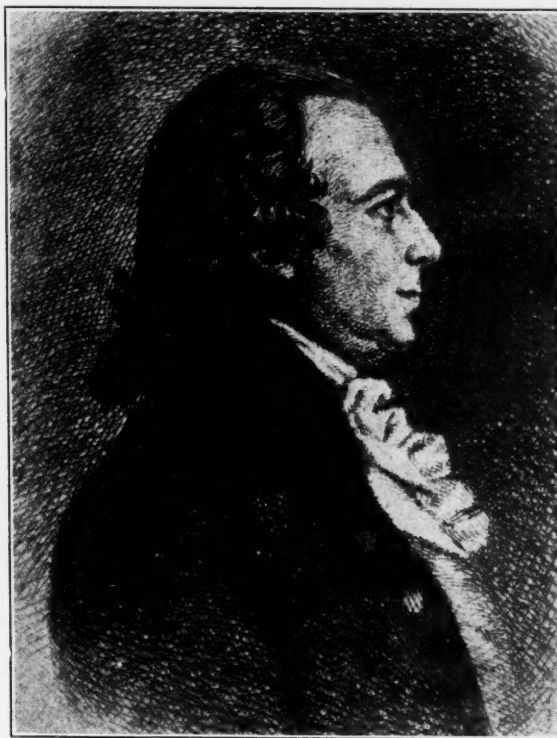
By a remarkable coincidence, the last illness of Washington's father appears to have been very similar to his own. He is known to have contracted a cold after an exposure in a storm and to have died after a brief illness. Of the immediate family of the patient, we find that, of those who had the same father but a different mother, Butler died in youth, Lawrence age 34, Augustine age 40, and Jane age 13. Of those who had the same mother as well as father, Bettie died at 64, Samuel at 47, John Augustine at 51, Charles at 61, and Mildred in infancy. Washington's oldest half brother, Lawrence, from whom he inherited Mount Vernon, is thought to have had tuberculosis. Washington made a trip with him when he went to Barbadoes in search of health.

On his mother's side we have not such definite information, but his mother, we know, lived to the good old age of 82, dying ten years before the death of the General.

Physical Characteristics and Habits. Describing his impressions, a writer in the *London Chronicle* wrote, "Washington is now 47 years of age. He is a tall, well made, rather large boned man, and has a genteel address. His features are manly and bold, his eyes of a bluish cast and very likely, his hair a deep brown, his face rather long and marked with smallpox; his complexion sunburnt and without much color; his countenance sensible, composed and thoughtful." George Washington Parke Custis wrote "General Washington's powers were mostly in his limbs. They were long, large and sinewy. His frame was of equal breadth from shoulder to hips. His chest though broad and expansive was not prominent, but rather hollowed in the center. He had suffered from a pulmonary affection in early life, from which he never entirely recovered.

His frame showed a remarkable development of bone and muscle; his joints were large and could a cast have been preserved of his hands in these degenerate days, it would be said to have belonged to a being of a fabulous age."

We cannot omit description of Dr. James Thacher, an eminent physician of



Dr. Ewell Cullen Dick

his day. Writing in 1778, he depicted him as "remarkably tall, full six feet, erect and well proportioned. The strength and proportion of his joints and muscles appeared to be commensurate with the pre-eminent powers of his mind." And he goes on to say, "the severity of his countenance and majestic gracefulness of his deportment impart a strong impression of that dignity and grandeur, which are his peculiar characteristics, and no one can stand in his presence without feeling the ascendancy of his mind and associating with his countenance the idea of wisdom, philanthropy, magnanimity and patriotism. There is a fine symmetry in the features of his face, indicative of a benign and dignified spirit. His nose is straight and his eye inclined to be blue. He wears his hair in a becoming cue and from the forehead it is turned back and powdered in a manner which adds to the military air of his appearance. He displays a native gravity, but devoid of all appearance of ostentation."

By actual measurement by Mr. Lear, after death, the body was found to be in length 6 ft. 3½ inches; across shoulders 1 ft. 9 inches; across elbows 21 inches.

Whatever may have been Washington's inheritance, it is certain—by assiduous self-discipline, which he practiced in physical as well as in mental matters—he constantly trained and increased his strength, his agility and powers of endurance. In boyhood games of wrestling, running, throwing, pitching quoits and the like, he is said to have excelled all his companions. One of the most frequently repeated anecdotes refers to his throwing a stone across the Rappahannock river, an incredible distance.

Throughout his whole life, constantly in the saddle in early life fox hunting, and later, in his campaigns,—he is generally said to have exhibited an expertness in horsemanship rarely excelled.

With regard to his habits, Irving writes, "He was an early riser, often before day-break in the winters when the nights were long. On such occasions, he lit his own fire and wrote and read by candle light. He breakfasted at seven in summer and eight in winter.

Two small cups of tea, and three or four cakes of Indian meal, (called hoe cakes) formed his frugal repast. Immediately after breakfast he mounted his horse and visited those parts of his estate where any work was going on, seeing to everything with his own eyes and often aiding with own hands. Dinner was served at two o'clock; he ate heartily but was no epicure and was not critical about his food. His beverage was small beer or cider, or two glasses of old madeira. He took tea of which he was very fond early in the evening and retired for the night about eight o'clock.

Previous Illnesses. What, if any illnesses Washington suffered in childhood is not known. It is surmised that he had measles, simply because he was much with Mrs. Washington, who had an attack early in their married life, and he did not contract it.

The earliest illness of smallpox at the age of 19, contracted during his visit with his brother Lawrence at Barbadoes. He was, he says, "strongly attacked." He was ill about three weeks and his face was left slightly marked. Shortly after he returned he had what was called "a violent attack of pleurisy which reduced me very low." During the Braddock campaign, Washington, then thirty years of age, was

stricken with a fever, accompanied by an intense attack as a result of which he was unable to continue the march. The nature of the trouble is unknown, but was apparently contagious as his servant developed the same kind of illness. Washington's indisposition continued without abatement from June 19 to 23, when he says "I was relieved by the General's ordering a physician to give me Dr. James' powder"* one of the most excellent medicines in the world. It gave me immediate relief and removed my fever and complaints in four days."

Two years later, while on the frontier, Washington was seized with an attack of dysentery with fever, which compelled him to leave the army and return to Mount Vernon. A few months later, this disorder was still returning at times obstinately upon him, he complains, "in spite of all efforts of the sons of Aesculapius." "At certain periods," he goes on to say, "I have been reduced to great extremity and have much reason to apprehend an approaching decay being visited with several symptoms of such a disease."

It was at this time, when on his way to Williamsburg to consult the best physicians there, that he met the widow, Martha Custis. The medical treatment was evidently successful, for despite the pessimistic foreboding to which he had just given utterance, within one month he was engaged, and within one year happily married.

In 1761, Washington was ill again with a fever of some kind, probably malarial, on account of which he made a visit to Warm Springs. He suffered considerably with pain and a disturbed sleep. A relapse occurring, he again became quite despondent. He writes "I was very near my last gasp. The indisposition increased upon me and I fell into a very low and dangerous state. I once thought the grim King would overcome my best efforts and that I must sink in spite of a noble strength."

In his diary, we have an account of the recurrence of the dysenteric ailment in 1768:

March 2—Hunting; again caught a fox with a bobbed tail and cut ears, after several hours' chase in which most of the dogs were worsted.

March 3—Returned home much disordered by griping and violent straining.

* NOTE:—James' powder was a mixture of a anti-moniuous oxide and calcium phosphates. It was diaphoretic in action and used frequently for inflammatory ailments of the respiratory organs.

March 4—At home with above complaint; sent for Dr. Rummey, who came in the afternoon.

March 5—Very bad, the doctor staying with me.

March 6—Something better. Doctor staying with me and Mr. Ramsey stayed to dinner.

After confinement at home of about a week, his recovery was indicated by entry under date of March 14: "Hunting with Captain Posey and Lund Washington; started and caught a fox in about three hours."

While in his retirement at Mount Vernon, at the close of the war, we learn from his diary that in September, 1786, he had suffered from attacks of ague and fever, the malarial character of which is quite evident from the fact of their periodicity and from their treatment and relief by the bark prescribed by Doctor Craik.

Entry of September 2, says "Kept close to the house all day, being my fit day in course, at least any exposure might bring it on. Happily missed it."

Shortly after assuming his office as President, Washington was laid up with a severe attack of what was called anthrax, but which was evidently carbuncle, located upon the left hip. It proved to be a very virulent process, causing such prostration of his strength that the country was at the time greatly alarmed for fear of a fatal outcome. The malady caused him great pain and discomfort and confined him to house nearly six weeks. When later he was able to go out, his coach had to be especially constructed to allow him to lie at full length. He was then under the medical care of Doctor Samuel Bard, one of the most eminent practitioners of New York.

Washington, when on a visit to Boston, was delayed a considerable time on the outskirts in rain and stormy weather because the city and state authorities were unable to settle a stupid dispute as to the etiquette of receiving the president. The result was that he developed a troublesome cold which caused some inflammation of the eyes. It seems that just following this visit an epidemic of colds developed in the city, which were from the incident, commonly referred to as the "Washington influenza."

In 1790, the federal government was removed from New York to Philadelphia. In the spring of this year, Washington was taken with another illness which almost

proved fatal, in the nature of inflammation of the lungs, probably pneumonia.

The close application to public business, and the incessant demands upon him incident to the office, proved no doubt to be a very great strain. He wrote, "I have already within less than a year had two severe attacks, the last worse than the first. A third, more than probably, will put me to sleep with my fathers. At what distance this will be, I know not.

"I am thankful that I am so well recovered, though I still feel the remains of the violent affection of the lungs, the cough, the pain in my breast, shortness of breath, not having entirely left me."

When Congress adjourned, August 12, 1790, Washington set out on a voyage to Newport, R. I., with the hope of having his health benefited by a sojourn in this already famous health resort. In a letter written by Jefferson to Madison June 9, 1793, he says, "The President is not well; little lingering fevers have been hanging about him for a week or ten days and affecting his look most remarkably."

The last year or so of his life his health was certainly much impaired. He writes under date of August 30, "No account of weather, etc., kept from hence to the end on account of a sickness commenced with a fever on the 19th and lasted until the 24th, which left me debilitated."

The same year he wrote to a correspondent explaining his failure on account of "debilitated health occasioned by the fever, which deprived me of 20 pounds of weight, I had when you and I were at Troy Mill Scales, rendering writing irksome."

In addition to the illnesses enumerated, Washington suffered certain infirmities of a minor kind. His teeth early in life (1754) gave him trouble and his expense accounts show frequent visits to the dentist, losing from year to year one tooth after another until finally all were gone and had to be replaced by a plate. He began to use glasses at the age of 46; in 1783 he remarked that he had grown almost blind as well as gray in the services of his country. His hearing in later years of life at least was noticeably impaired. Maclay remarked this in 1793, and said he believed the President heard only a small part of the conversation in which he engaged. Washington, himself, writing to Jefferson in 1786, said that he was sensible of a decay in hearing and that perhaps his other faculties might be falling off.

The above account of his last and former illnesses gathered from various reliable sources comprise such exact and detailed clinical data, that it may be said to constitute a fairly complete anamnesis, on the basis of which, even at this late day, we feel justified in reopening the case in order to consider the diagnosis and treat-



Dr. Gustavus Brown,

(Father of Dr. Gustavus Richard Brown)

ment in the light of accumulated experience and the more advanced state of medical knowledge of the present period.

Summarizing, we find that Washington came of short lived paternal ancestors in whom there was a marked tendency toward affections of the respiratory tracts; that, by a life in the open, with constant exercise of his physical energies and regular and temperate habits, he developed a marvelous constitution, which was indeed put to severe test by the hardships of his military campaign and the evactions of his political life, not showing decided signs of breaking until the last one or two years of his life.

He had a number of illnesses, the nature of all of which is not definitely known, though the following seems well established, viz., smallpox, dysentery, malaria, pneumonia. In addition, he had much trouble on account of carious teeth. His illnesses were several times of such

severity that his life was almost despaired of, and he seemed at these times to have taken a most pessimistic view of the outcome. With regard to his last illness, it was clearly due to taking cold from exposure to very inclement weather, accentuated by failure to change his clothes which had become wet from rain and snow. Within twelve hours he had developed symptoms of an acute inflammatory condition of the throat, indicated by difficulty in speaking, swallowing and breathing. His chief symptoms in the order of their occurrence were sore throat, hoarseness, cough, chill, difficulty of breathing, difficulty in swallowing, expectoration, fever, loss of voice and suffocation.

There is no mention that the interior of the throat was examined at any time, and we believe that it was not done; otherwise, it would certainly have been mentioned by Lear, or by his physicians. Chest examination was negative.

Outside of simple catarrhal inflammation of the mucous membranes, the acute inflammatory affections of the throat are of three kinds:

1. Those attended with formation pus, as quinsy.
2. Those attended with the formation of a pseudomembrane, as diphtheria.
3. Those characterized by watery infiltration, as inflammatory edema.

We will consider briefly the individual affections suggested by the symptoms in Washington's case:

1. *Acute Laryngitis*.—This affection, designated in the text-books as acute catarrhal laryngitis, is due to simple inflammation of the mucous membrane of the larynx, and occurs as the result of taking cold. It is marked by hoarseness, and there may be complete loss of voice; there is usually sore throat, slight fever and some cough, but ordinary acute laryngitis is not attended with difficulty in breathing, which this distinguished patient had to an extreme degree. Moreover, ordinary acute laryngitis is a mild affection, never ending fatally.

2. *Quinsy*.—This is suggested by the chill, fever and very difficult swallowing, and probably also by the observation of Lear that when the patient attempted to use the gargle, he suffocated, and when the gargle came from the throat some phlegm followed. But that this should not be taken to mean the purulent discharge of quinsy is evident enough when you re-

flect that the latter occurrence is invariably followed by the most pronounced relief and generally by a prompt recovery from the ailment. Opposed to the idea that the trouble was quinsy is not only that a fatal termination in this disease is a most exceptional thing, but also that it is at any rate of quite rare occurrence in the aged. Quinsy is, furthermore, nearly always a unilateral disease; it causes a marked swelling on the outside of the throat, especially on the side affected, and usually causes the patient to hold the head toward that side and is apt to be attended with a trismus, that is to say, inability to open the mouth except for the slightest distance; none of these symptoms appear to have been noted. The swallowing in the case, says the physician's statement, was difficult rather than painful; but in quinsy painful swallowing is an outstanding feature. Beyond all this, there were symptoms in Washington's case which do not belong at all to the picture, viz., the hoarseness and loss of voice, and especially the difficult breathing.

3. *Laryngeal Diphtheria*.—The hoarseness and loss of voice, with increasing difficulty in breathing with eventual suffocation suggest the idea of diphtheria. Opposed, however, to this assumption is the fact that laryngeal diphtheria is eminently a disease of childhood and quite rare in the aged; secondly, the absence of any history of diphtheria in the neighborhood; besides, the usual clinical course of diphtheria is very different from that here shown, namely, a slow onset, with toxic symptoms comparatively severe, but local throat symptoms comparatively slight. The marked difficulty in swallowing does not belong to the picture of laryngeal diphtheria.

4. *Inflammatory Edema of the Larynx*.—This differs from the simple laryngitis which is an inflammation confined to the membranous lining of the larynx, in that it involves the tissues lying beneath the mucous membrane, that is, of the submucous tissue. It is characterized by dropsical effusion or edema of the submucous tissue, causing great swelling in the epiglottis and other parts of the larynx. As a result of the inflammatory swelling, there is marked difficulty in swallowing, which becomes painful and almost impossible when there is much involvement either in the posterior or anterior region of the larynx, especially if the epiglottis or lid of the larynx is swollen. When the infiltration encroaches

upon the chink of the glottis, there occurs naturally difficulty in breathing, increasing it may be to the point of suffocation.

It is generally recognized as being due to the action of organisms of unusual virulence, especially the streptococcus. It is initiated by severe rigor, followed by a rise of temperature, attended by marked prostration, and the process is of rapid development, not infrequently ending fatally.

The symptoms and the course of the disease in Washington's case corresponds so exactly with a typical history of acute inflammatory edema that, despite our distance in time and the absence of modern diagnostic criteria, we have no hesitancy in setting up this as the correct diagnosis. The inflammatory type of edema must not, of course, be confounded with the non-inflammatory sometimes occurring as secondary to certain chronic organic diseases, as in Bright's disease, for instance. The edema in such instances is of a passive kind coming on slowly and not attended with evidences of severe local inflammation such as mentioned.

There are certain other acute throat troubles which might be thought of in connection with this case, as Vincent's or Ludwig's angina, but there is no justification for concluding their presence. Vincent's angina never assumes such an acute stormy clinical course, and Ludwig's angina cannot be diagnosed without the characteristic swelling in the floor of the mouth and the hard, board-like rigidity encircling the neck, which we have no reason to think were present in this case.

Before making any criticism of either the diagnosis made or the treatment instituted by the physicians in attendance upon Washington, it is very important that we bear in mind the difference in the state of medical knowledge between that era and the present, and especially the limited knowledge then existing with regard to disease of the lower throat, which is, in fact, a modern specialty.

It was fifty-six years after Washington's death that Manuel Garcia described before the Royal Society of London a method of examining the larynx, now universally practised, and it was even later when Pasteur and Koch had laid the foundation of modern bacteriology, now so essential in the diagnosis and treatment of disease of every kind.

The eighteenth century was, as Garrison says, the age of theorists and system makers in the science of medicine, when tedious and platitudinous philosophizing

upon a *prior* ground was the fashion of the day. Little had been done to establish a definite pathology of throat conditions. John Fothergill, a close friend of Franklin and known for his sympathetic sentiments for the American cause, wrote in 1748 the first complete description of diphtheritic sore throat. John Huxham, whose name has become associated with the cinchona treatment of malaria, wrote in 1757 an essay on "Malignant Sore Throat," and Samuel Bard, of New York, who by an interesting coincidence was Washington's physician during one of his severe illnesses, published in 1771 a paper dealing with the subject of "Angina Suffocativa," referred to by Osler as a classic of the first rank. The diagnosis made in Washington's case by the attending physicians after consultation was "Cynanche Trachealis." This diagnosis has often been assailed as incorrect, but was it not correct according to the standards of classification then existing? At the period of which we write, Edinburgh, already famous for its surgery through the influence of the Monroes and the Hunters, had now also become the chief center for internal medicine largely from the prestige of such names as Cruikshank, Withering and Cullen. "First Lines in the Practice of Physic," by William Cullen, Professor of Medicine at Edinburgh, was at that time authoritative throughout the English speaking world at least, and we may well imagine that it was the chief source of information for Washington's physicians, especially as we know that Doctor Craik was a Scotchman born, and a graduate at Edinburgh, and Doctor Brown the son of a Scotchman and likewise a graduate from Edinburgh. Doctor Elisha Cullen Dick, notwithstanding his middle name, was not Scotch, but American born and a graduate of the University of Pennsylvania.

Cullen has a chapter in a work published in 1778, devoted to the subject of Quinsy, or Cynanche, of which he considers there are four varieties, viz., cynanche tonsillaris; C. maligna; C. trachealis; C. pharyngis; C. parotidea.

Of cynanche trachealis, he writes, "This name has been given to an inflammation of the glottis, larynx or upper part of the trachea, whether it affects a membrane of these parts or a muscle adjoining. It may arise first in these and continue to subsist in them alone, or it come to affect these parts from the cynanche tonsillaris or maligna spreading into them.

"In either case it has been a rare occur-

rence and a few instances of it have been marked and recorded by physicians. It is to be known by a peculiar croaking sound in the voice, by difficult respiration with a sense of straightening about the larynx, and by an attending pyrexia.

"From the nature of these symptoms and from a dissection of the bodies of persons who have died of this disease, there is no doubt of its being of an inflammatory kind. It does not, however, always run a course of inflammation, but frequently produces such an obstruction of a passage of air as suffocates, and thereby proves suddenly fatal.

"If we judge rightly of the nature of this disease, it will be obvious that a cure of it requires a most powerful remedy for the inflammation, to be employed upon the first appearance of symptoms. When a suffocation is threatened, whether any remedies can be employed to prevent it, we have not an experiment to determine.

"As we suppose the disease to be an inflammatory affection, so we attempt a cure of it by the usual remedies of inflammation, and which for the most part we have found effectual. *Bleeding, both topical and general, has often given almost immediate relief, and by bleeding repeatedly has entirely cured the disease.* Blistering, also near to the part affected, has been found useful. Upon a first attack of the disease vomiting immediately after bleeding seems to be of use, and sometimes removes the disease. In every stage of the disease, an antiphlogistic requirement is necessary, and particularly the frequent use of laxatives. Though we suppose that a spasm of the glottis is often fatal in this disease, we have not found antispasmodic remedies to be of any use."

While vague as regard pathology, the symptoms described are such as correspond very closely to those of inflammatory edema as we call it today. The disease is seen as located, notwithstanding the name tracheal, in the region of the glottis or larynx; it is marked by altered voice, sense of constriction, fever and difficult respiration due to obstruction, and tending to end fatally. The diagnosis made by Washington's physicians was then correct, according to the nomenclature then existent, and we may say, taking Cullen as an authority, indicates very closely the true condition, as it is understood today. It appears from a letter written by Doctor Brown to Doctor Craik a very few days afterwards that the diagnosis was at first quinsy, and that the

change was evidently due to Doctor Dick's influence. In this letter, too, Doctor Brown assumes that he with Doctor Craik should reproach themselves for the excessive bleeding. But, as a matter of fact, the term quinsy at that time was not a misnomer as it would be today. It is now generally understood to refer to an abscess of the tonsil or the peritonsillar tissue; but, originally, the term quinsy had the same significance as the word cynanche, that is to say, a suffocative affection of the throat, and we find that it is used as a generic designation synonymously with cynanche by Cullen as the heading of his chapter on the subject.

With regard to the treatment of the case, after reading Cullen we cannot fail to be struck with the faithful adherence to the methods recommended by this authority. Blistering, bleeding, emesis and catharsis are the main stays of his therapeutic regimen. In addition to them, Washington had the benefit of hot mustard foot baths, and hot steam inhalation, which form part of the present methods in the treatment of this class of throat affection. In regard to the bleeding, this had been the occasion of the chief condemnation visited upon Washington's physicians. It was with this in mind that Ford in his "True Washington" says, "There can scarcely be a doubt that the treatment of his last illness by the doctors was a little less than murder."

Such brutal cock-sureness of statement could emanate only from an opinionated layman, ignorant of the possibilities in such a case. If there is anything certain about the case it is that the chief factor responsible for the fatal termination was the asphyxia, due to obstructive swelling in the region of the glottis.

Admitting the possibility that the blood-letting was a contributory factor, no blame can properly be attached to Washington's physicians on that account. They were following the best authorities, instituted treatment orthodox in that day and, indeed, widely practised for the following forty or fifty years. With men of such influence as Benjamin Rush, in their own country, enthusiastically advocating the practice of blood-letting, and with Cullen specifically advising its use, with repetition to be of advantage in this kind of case, Washington's physicians would indeed have laid themselves open to censure if they had failed to use it as they did. It must be realized that Washington's illness was one of a tendency toward fatal term-

ination. Moreover, he was not, as some have assumed, a man at that time in the full vigor of health but presenting, as remarked by himself as well as by others, decided evidences of physical deterioration.

What treatment would we use today and what difference in result could we expect?



Dr. Samuel Bard

It is at the very beginning of an attack of this kind that treatment is most effective, and very often simple measures will answer. A cold ice compress placed on the outside of the throat with pieces of ice to swallow; with laxatives, diaphoretics, simple diet, rest in bed, and especially rest of the voice is the line of treatment which today would generally be prescribed in the very beginning with hope of aborting an attack. In this connection, it is apropos to remark that Washington was himself guilty of an indiscretion which we regard as of much importance in the hygiene of cold-catching. On coming into the house, his neck, as remarked by his secretary, was wet and snow was clinging to his hair. He came to dinner which had been waiting for him, without changing his clothes. If Washington had but dried his clothes, it is possible that a glow of healthy reaction would have set up and his cold would never have developed.

The next day, signs of cold were present and he complained of a sore throat, but

he was again indiscreet in going out in the afternoon in spite of cold inclement weather "to mark some trees which had to be cut down." In the evening he had a hoarseness but "he made light of it." There was evidently congestion in the region of the vocal cords, which is a condition that demands complete abstention from the use of the voice. But we learn that that evening, the distinguished patient spent the evening reading, and "when he met with anything interesting or entertaining, he read it aloud as well as his hoarseness would permit." On his return that night Mr. Lear observed that he had better take something to remove the cold. Washington's reply was, "No, you know I never take anything for a cold. Let it go as it came." The next morning at two or three o'clock, it had already reached a severe stage; he could scarcely speak and breathed with difficulty. Even then, this great man, more concerned for the comfort of others than himself, would not allow Mrs. Washington to get up and call a servant for fear that she might take a cold.

When by our modern method or laryngoscopy, we have demonstrated and edematous swelling of the tissues of the larynx, the first thought would be the application of adrenalin. This remarkable agent, discovered in 1901 by Takamine, has the effect of producing a powerful constriction of the blood vessels, lessening the blood supply and producing within a few minutes a blanching of the tissue and lessening the swelling. As its effects are only temporary, it is necessary to repeat at intervals the application. If the inflammation is too intense to be conquered in this way, the next step is to practice what we call scarification of the tissue, that is, making short incisions into the infiltrated tissue which should bring about a reduction of the swelling by escape of the serous fluid from the mucous membrane. When these measures fail, more heroic surgery must be adopted. This consists in either the introduction of a tube by way of the mouth, allowing the patient to breathe *per vias naturales*, or the opening of the windpipe by incision from without, that is, the operation of tracheotomy. The former operation, intubation, as it is called was not introduced into practice until about 1856, by Bouchut and Trousseau, of Paris—still later perfected and made a practicable method by the labors of O'Dwyer, of Cleveland. It is true that the operation of tracheotomy was known in Washing-

ton's time; in fact, the opening of the windpipe was practiced sporadically even in the most ancient times, as shown by some obscure historical references, but it never at any time gained currency as an accepted surgical procedure. The criticism which has been aimed at Washington's physicians for not performing the operation is a very unjust one, in not taking into account the prevalent practice and opinion of the times. In the middle of the eighteenth century there were attempts here and there to introduce it into practice and, strange to say, for the resuscitation of drowned persons, upon a mistaken theory of the causation of death in such cases. Hume, of Edinburgh, as early as 1756, recommended the performance of opening the windpipe, bronchotomy as it was then called, for the relief of suffocation in pseudomembranous croup, but the first record of the performance for this condition is by Andree, of London, in 1782.

The fact is, as soon as one recommended the procedure for any purpose, he was immediately opposed by the leading authorities, and he would have few or no followers. It was just in the year 1798, one year before Washington's fatal illness, that Desault and Bichat, of Paris, the most eminent surgeons of that day, published their brochure on tracheotomy as a surgical procedure. In the work they took the stand that it was not a surgical procedure to be recommended in any form of angina. In the year of 1807, Louis Napoleon, having lost his oldest son from an attack of croup, called a conference of physicians and offered a prize of 12,000 francs for the best essay dealing with the subject. It was the universal conclusion that the operation of opening the trachea was useless and inefficacious in such cases. It was really not until 1826, after the appearance of the famous treatise of Bretonneau on Laryngeal Diphtheria, that tracheotomy was looked upon as a justifiable intervention. If, then, we condemn Washington's physicians for not giving him the chance of that operation, what would the world have said at that time if they had taken that chance and failed? It is an operation to which, when other measures failed, we would resort today, and with a fair chance that it would save the life of the patient; nevertheless, the best surgical authorities are careful to warn against too much confidence in its success in this class of cases, and of leading the family to believe that it is a certain means of averting death. Even when the asphyxia is completely re-

lieved, there is great danger if the heart has been weakened in the struggle for breath, that death may ensue from cardiac failure.

Now, summarizing our knowledge of the case, taking into consideration not only all records with regard to this last attack of illness, and likewise in connection with it all available documents as to the patient's previous health history, his family inheritance and contemporary references to his peculiarities of constitution and temperament, we feel that we are entitled to certain definite conclusions.

In the first place, it is certain that Washington did not have quinsy as most often stated in the histories; nor diphtheria, as next frequently reported; nor ordinary acute laryngitis, as very often affirmed; nor pneumonia, as many believe; nor cancer, or tuberculosis, which have been here and there intimated.

All information leads us to believe that the malady responsible for his death was an acute inflammatory edema of the larynx, an affliction which attacks the tissue lying beneath the mucous membrane. It is characterized by a painful swelling of the structures of the larynx and the adjacent tissues below and above, including the epiglottis, causing great difficulty as well as pain in swallowing. When the swelling involves the glottis, the narrow gateway to the lungs, it obstructs the entrance of air and threatens death by asphyxia, or actual suffocation. And when it appears in a violent form, as in this case, it is, we may assume, actuated by some virulent micro-organism—in all probability the streptococcus. The diagnosis made by Washington's physicians, as given out in a statement five days after his death, *cynanche trachealis*, indicates that they had an idea of the location and nature of the malady, as near as it was possible in the limited knowledge then existent of this class of diseases—in fact, much more nearly correct than the diagnoses which have found current acceptance in the opinions of our own day.

In regard to the treatment, while not that which we should administer at the present time, it was the orthodox treatment of that day. It followed closely the authority of the great Edinburgh school of medicine, of which two of Washington's physicians were themselves graduates. Bleeding the patient was expressly advised for this affliction, and its repetition recommended as the most effective means of combating its progress.

It was the widespread practice of that time, in fact, for many years following, to take huge quantities of blood, and it may be incidentally mentioned that Washington himself was a firm believer in the practice and frequently ordered it for those of his household or the slaves upon the estate.



Dr. William Cullen (1712-1790)

Washington's death was not due to excessive bleeding, as has been sometimes recklessly stated; it was the inevitable consequence of a relentless encroachment of the inflammatory swelling upon the narrow passageway at the glottis, cutting off the vitally necessary supply of oxygen, and associated no doubt with a general toxic infection from some virulent micro-organism, most likely the streptococcus. Unless relief comes otherwise in such a case, it is obvious that the patient, whether bled or not, must succumb from air starvation. Washington, then, you may be sure, was not bled to death; rather it may be said that he choked to death, for death was due primarily to suffocation.

At the present time in such a case *in extremis*, we would perform the operation of opening the trachea to allow the direct ingress of air to the lungs. There is a chance, though not a certainty, that it would save the patient's life from a fatal termination which, in such a case, is favored by the general toxic state and cardiac depression.

Washington's physicians are not to be censured for failure to perform the operation because its employment in such cases did not have the indorsement of the medical authorities of that day—in fact, they were mostly opposed to it.

A survey of the health history of Washington's family and of his own personal previous illnesses indicates an inherited tendency toward inflammation of the respiratory passages. His father died by a peculiar coincidence under circumstances much the same as those of his own case, death occurring rather suddenly from a severe inflammation contracted as a result of exposure to inclement weather. Washington's half-brother, Lawrence, had pulmonary infection, probably tuberculosis, which was the cause of his death.

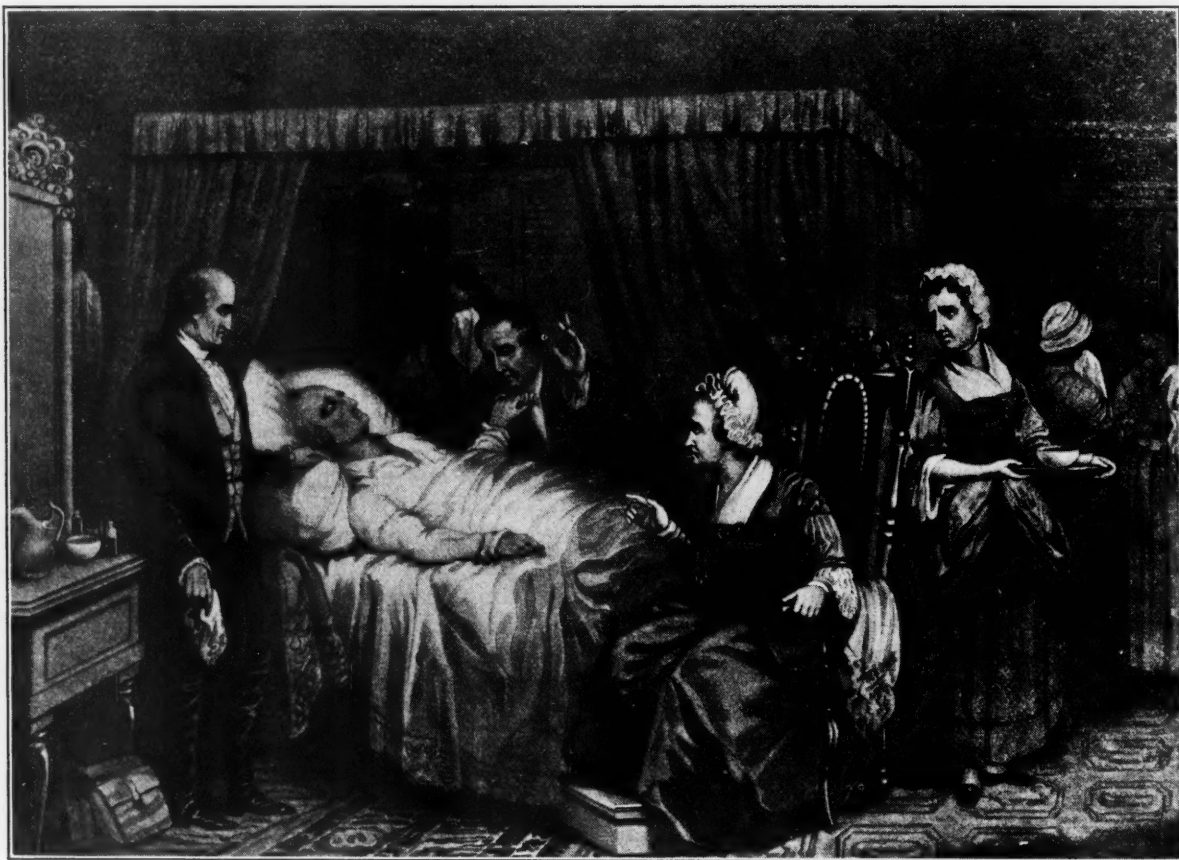
Washington himself had during his life several illnesses affecting the upper or lower respiratory tract. During the Braddock campaign, he was for some time out of commission on account of an illness apparently of the nature of a contagious affection of the respiratory tract; in Boston, he had an attack of something like the influenza; he was the subject once or twice of a pleuritic affection; and he had once a nearly fatal attack of pneumonia. What,

we may ask, would have been the fate of this country of ours, had not this great man succeeded in overcoming an evident inherent constitutional weakness by a rigid discipline of his physical energies!

With habits from youth of constant exercise and a life adapted to the development of bodily vigor and a capacity for endurance, there was prepared for our country in its time of trial the one man who was equal to the situation.

The foundations of Washington's ill-health of his late years, and the beginning of the decline which led to his last illness was no doubt the abrupt change in the character of his life, necessitated by his taking up the arduous duties of the presidency. Very loath to assume the honors and longing constantly for his beloved Mount Vernon, his sense of duty and ardent patriotism held him too long, for the good of his health, to the exacting routine of administrative work.

We cannot refrain from drawing one other lesson from the case which we think of importance in connection with the subject of the seriousness of taking cold. A simple cold led directly to a fatal result. Two faults were committed, the evils of which should be emphasized; first, Wash-



The Death Bed of Washington

ington, coming in from the storm with his clothes cold and wet, neglected to change—one of the most effective means for inviting the onset of a cold. Secondly, when the cold had produced a hoarseness, indicating that it settled in the larynx and affected the vocal cords, he persisted in using his voice in reading aloud, thus doing the very thing that would tend to increase the congestion and intensify the inflammation of the parts particularly affected.

Washington was exceedingly pessimistic about his own illness; he had made up his mind that he was going to die, and he did what he could to dissuade his physicians from making special efforts for him and let him die in peace. "I find I am going," he said to Mr. Lear. "My breath cannot last long. I believed from the first that the disorder would prove fatal." And, a little later, he repeated the same conviction to Dr. Craik: "Doctor, I die hard, but I am not afraid to go. I believed from the first attack that I should not survive it. My breath cannot last long." And later, when Doctor Brown came into the room, "I feel myself going; I thank you for your attention but I pray you to take no more trouble for me. Let me go quietly. I cannot last long."

When he was ill in New York from carbuncle, Washington revealed a similar pessimistic attitude of mind and the same equanimity in the contemplation of death. Being alone one day with his doctor, he asked him his candid opinion as to the result. "Do not flatter me with vain hopes; I am not afraid to die and can therefore hear the worst." He gave expression, too, more than once to a premonition of death. He was but fifty-two years of age when he wrote to Lafayette, "I have often asked myself as our carriages separated whether that was the last sight I would ever have of you, and, though I wanted to answer 'no' my fears answered 'yes.'" In 1797, writing to another friend, he said, "To cultivate my farm, which requires close attention, will occupy the few years, perhaps days, I may be a sojourner here," and in September, 1799, in a letter to Colonel Burges Ball, "I was the first and now the last of my father's children by the second marriage. When I will be called upon to follow is known only to the Giver of Life. When the summons comes, I shall endeavor to obey with good grace." And did ma never obey with better grace? Afflicted with a malady of the most painful and distressing character, he exhibited a

patience and fortitude rarely seen. And mark through it all his never failing courtesy, his thought for the comfort of those about him, rather than for his own, and his sincere gratitude for services rendered him.

Truly, as he lived the life of a great general, and patriot, statesman, he died the death of a Christian gentleman.

The Rochambeau.

NOVASUROL IN THE TREATMENT OF THE CARDIO-RENAL EDEMA

A. H. MOLLMANN, M. D.

W. T. DODGE, M. D.

(Chief Surgeon and Assistant Surgeon at Michigan Soldiers' Home Hospital.)

GRAND RAPIDS, MICH.

Since the introduction of the mercury compound Novasurol into the treatment of edema by Saxl and Heilig in 1920 an exceedingly powerful and sometimes harmful diuretic was given for the use of the profession in cardio-renal disease as a last resort, when digitalis preparations, purin derivatives or the saline, or the glucose treatment in combination with an adequate diet failed. However, the pharmacological action of novasurol is still a complicated biochemical problem.

We have used novasurol during the past year on several cases, five of them are briefly described and discussed.

Case No. 1—David M., age, 58 years. Admitted May 9, 1927, with generalized considerable anasarca. Weight 220 lbs. Pulse 120, regular. Blood pressure 152 to 72 mm. Respiration labored rate 24. Heart enlarged. Urinalysis high specific gravity, much albumen, many granulated casts. Blood N. P. N. 24.

Diagnosis—Acute tubular nephritis following grieppe.

Treatment—Liberal protein diet with reduction of NaCl and water, digitalis and theobromine internally. May 14, '26, patient's condition worse, he gained 5½ lbs in weight, pulse feeble, respiration much labored. Digitalis and theobromine discontinued. Novasurol 1.2 cc. given intravenously every five days for three doses, diet the same—considerable diuresis. After 23 days patient had lost 72 lbs in weight. Blood pressure 148, albumen positive, no casts. July 8, '26: patient discharged as recovered. October 14, '26: patient informed the hospital that his weight is 158 lbs. and that he eats general diet.

The fact that a low Na Cl diet in combination with diuretin and digitalis did not show any results at all upon the edema, may lead to the conclusion that this edema was caused by a toxism upon the capillary endothelium according to the experiments of the uran and chrom nephritis. The result of the novasurol treatment was most excellent.

Case No. 2—Mrs. Emily E., age 66 years. Patient was under our observation since November,

1925. She always had large generalized oedemata affecting the eyelids, and difficulty in breathing. Blood pressure high, ranging between 180 to 220 mm. Heart enlarged, albumin and many casts in the urine, which did not disappear upon digitalis medication, specific gravity 1.024. Blood N.P.N. 40, and secondary anemia.

Diagnosis — Arteriosclerotic nephrocirrhosis, malign form of Fahr-Volhard.

Prolonged treatment by dieting with theobromine medication gave no relief. On May 19, 1926 she developed an uremia of the axotaemic type. Vomiting, slow pulse, anuria, positive Babinski and coma. Hot baths and high enema were given. In July she developed a marked larynx edema with considerable dyspnoea. Novasurol was given one to two cc. intravenously with good results, as the larynx edema disappeared for about 14 days, then another novasurol treatment had to be administered. Thus the larynx edema was kept under control until October 10, 1926, as another considerable larynx edema with anuria developed. Again novasurol was given and followed by a paradox reaction, with increase of the larynx edema and an acute lung edema. Patient stayed anuric and passed away on October 11, 1926.

No dietetic routine, whether protein low or salt low or water carence was administered, showed any noticeable effect upon the oedemata; digitalis and theobromine did not work; only the fact that the oedemata did not follow the laws of gravity as there was a considerable oedema of the eyelids, may point out that this oedema was of the chemical type. The result of the novasurol medication was prompt in the beginning of the treatment; but the last injection produced a paradox reaction, evidently by overdosis.

Case No. 3—Mr. James M., age, 79 years. Admitted October 21, 1926, with headache, dizziness and oliguria. Pulse 84 regular. Blood pressure 160 to 84 mm. Heart enlarged 12 cm. from medial sternal line, many sclerotic shells can be felt in the wall of the radial arteries, few moist rales over entire lungs, slight oedemata on both ankles, spastic paralysis on both legs. Oppenheim and Romberg's symptom positive, in urine no albumen and no casts, specific gravity 1.020, Blood N.P.N. 26.2, Hemoglobin 55 per cent.

Diagnosis—Arteriosclerotic nephrocirrhosis, benign form of Fahr-Volhard.

Treatment—Novasurol was given and followed by an immediate considerable diuresis for two days. Novasurol was repeated three days later with only little results, then tincture strophanti was added to the novasurol and followed again with a marked diuresis through the entire treatment. Patient was discharged from Hospital December 26, 1926.

Case No. 4—Mary J., age 71 years. Admitted July 3, 1926. Complains constant dizziness and headaches. Irregular bowels. Blood pressure 155 mm. to 85 mm. Heart enlarged 12 cm. from medial sternal line. Second aortic sound is accentuated. Few rales over entire lungs. Moderate oedemata of both ankles and legs. Urine contains albumen, granulated and fatty casts. Hemoglobin 75 per cent, blood N.P.N. 52.

Diagnosis — Arteriosclerotic nephrocirrhosis, malign form of Fahr-Volhard.

Treatment—Low protein diet, novasurol intravenously, every third to fifth day in combination with digitalis and squill. Patient had a good diuresis, and was able to be up and about on Sep-

tember 1, 1926. Blood N.P.N. found 28.2, urine contained casts.

These two cases differ only in the fact that the one is complicated by renal insufficiency and the other not. Both oedema agree in the fact that they follow the laws of gravity and that to some extent they are influenced by digitalis preparations. Both edemata may be continued merely as mechanical ones. The novasurol treatment had fair results, which were increased by digitalis preparations.

Case No. 5—Mable G., age 58 years. Admitted September 25, 1926, with generalized anasarca, difficulty in breathing, respiration rate 38, and oliguria, heart enlarged 13.5 cm. from medial sternal line, no murmurs, heart sounds low, pulse rate 108, blood pressure 125 to 65 mm. High specific gravity of urine, albumen present, no casts. Blood N.P.N. 28.1, Wassermann negative, husband suffering from tables dorsalis.

Diagnosis—Myocardial degeneration, (syphilitic?).

Treatment—Tr. strophanti, caffein citrate.

September 27, as the large oedema responded only slightly upon the treatment and patient threatened to exhaust, novasurol was given 1.2 intravenously and followed by large diuresis for three days, bowels became quite loose. Novasurol was repeated several times every 4-7 days, according to patient's condition, and on November 18, patient was able to be up and about.

January 3, 1927—Without our knowledge the patient took patent medicine for her kidneys, which colored the urine greenish and caused immediately oliguria and another considerable generalized oedema with a large ascites.

January 10, 1927—Again novasurol was given intravenously with digitara (Upjohn.) with good results, and patient is recovering well.

This case shows no evidence of kidney complications. The oedemata is influenced to some extent by digitalis preparations and follows the laws of gravity. It is to be considered as a mechanical one. Addition of purin derivatives did not improve the action of digitalis. Novasurol in addition to digitalis showed good results.

Calomel was used as a marked diuretic, especially when the intestinal diarrhoea is prevented by opium, long before the discovery of novasurol. Owing to the traces of mercury ions, given off by the calomel in the gut, it makes the intestinal epithelium, with which it comes in contact, swell, so that the reabsorption of the intestinal secretions is hindered and the water prevented from entering the lymph and the blood, and, therefore, the oedematous tissues are forced to release their water to the anhydraemic blood. Molitor and Pick showed according to their experiments that in a similar manner the mercury ions gradually split off from the novasurol, increase the swelling of normal tissues reached by them so that they withdrew water by way of the blood stream from the water rich, oedematous, tissues. With the excretion or chemical neutralisation of the active mercury, the imbibition pressure in the tissues falls to normal, and the water set free flows into the blood and over into the kidneys.

According to this theory of Molitor and Pick the increase of larynx oedema and the acute lung oedema in case No. 2 upon the use of novasurol was a toxic dosis. A permission for an autopsical study of this case was not obtained; however a short theoretical consideration of the mercury poisoning may be added. It is an important

phase of the mercury poisoning that the calcium metabolism is involved. The calcium is received from our food, kept in solution in the blood and in the tissues by the albumen colloids and carbon dioxide according to Hofmeister. The calcium salts stay ionized and there is no chemical compound between calcium and albumen. Normally about 80 per cent of the calcium is discharged through the gut, especially through the large intestine, most of the 20 per cent left is discharged through the kidneys. The toxic doses of mercury causing enteritis and degenerative processes in the epithelium of the tubuli contorti of the kidneys, etc., necessitates the diversion of the calcium metabolism in a manner that the larger amount of calcium ions are discharged through the kidneys already degenerated by the mercury, as the intestines badly injured by the enteritis are unable to take care of them. This way every mercury poisoning is characterized by calcium precipitation into the tubuli contorti of the kidneys. A clinical conclusion can be withdrawn from this as it contraindicates the coincident use of saline cathartics as magnesium salts of the sulphuric, carbonic, phosphoric, or tartaric acids, which form precipitates or sparingly dissociated compounds with calcium. (Romertson, Principles of Biochemistry.) In fact, they increase the Na/Ca ratio, which is considered to be the active principle of the saline cathartics, and thus prepare the ground for Calcium metastasis into the kidney epithelium. It is further to be recalled that according to M. B. Schmidt (Aschoff, Pathologische Anatomie, Bd. 1.) the chemical changes in the blood by the nephritic condition itself produce lessening of the dissolving power of the calcium salts. From these reasons we avoided the use of saline cathartics, while the patients were under the influence of novasurol. This fully meets the statement of Ph. S. Hench, that in certain cases, when diuresis has not followed the use of ammonium chloride, or merbaphen alone, combined treatment is effective, the chloride by mouth and the merbaphen intravenously. This is especially true when the blood chlorides are found to be low. According to Keith and Barrier in every case in which ammonium chloride was given, two characteristic chemical changes occurred in the plasma: a fall in the carbon dioxide combining power and a rise in the chlorine content. The amounts of calcium and magnesium excreted daily were small and showed considerable variation both in concentration and total excretion. Thus by the addition ammonium chloride to novasurol Ph. S. Hench increases the Na/Ca ratio, obtains a chemical condition in the blood which leads to hyperirritability of the tissues, without increasing or precipitating the calcium ions in the blood. The choice of ammonium chloride as a combined treatment with novasurol is from this point of view very fortunate.

Under proper indication the results obtained from the use of novasurol in cardio-renal edema are often so excellent that we recommend the use of it to much larger an extent than has been done up to now.

Still novasurol as well as calomel are to be considered as remedies of last resort. In case of cardinal edema that cannot be influenced successfully by digitalis preparations, an attempt with low Na. Cl. diet and water carence, in renal edema a much more extensive dietetic routine should be first attempted. In old sclerotic people an attempt with diuretin, if this is without result, theocylon, in young people better theocin-

natioaceticum, or euphyllin should be first tried. Toxic conditions from novasurol are rare, as long as the first dosis of novasurol does not exceed 0.75 cc., and the following doses do not exceed 1.5 cc. given in a few days pauses, if the result is not sufficient. (Romberg, Munchener Med. Mchsch.)

DISCUSSIONS

Edemata are disturbances of the hydrostatic equilibrium in the inter-endothelial stomata of the capillary wall, which is produced by the varying pressures in the blood stream and in the tissue spaces, and the exchange of dissolved substances produced by the secretory and absorptive activities of the capillary endothelium which is determined by chemical and osmotic forces (Limbeck, Grundriss der klinischen Pathologie des Blutes). The cardiac edema is caused merely mechanically by venous hyperaemia and follows the laws of gravity. The nephritic edema is caused either by an insufficiency of the kidney to discharge Na Cl or water, or by a general toxic injury to the capillaries and the tissues, consisting of a toxic change of the salt and water metabolism according to Aschoff, the experimental proof of which was given in the uran-nephritis and chrom nephritis in rabbits, by Heinicke.

REPORT OF A CASE OF A PIN IN THE APPENDIX*

H. M. NELSON, M. D.
DETROIT, MICH.

True foreign bodies causing appendicitis are very rare. In general it may be said that appendicitis due to irritation and trauma from foreign bodies does not represent more than 2-3 per cent of all cases. Sharp pointed metallic foreign bodies represent a class by themselves. They have rarely been found, even in large surgical experience, and this occurrence represents a surgical curiosity. The literature on this subject has been carefully reviewed by Mitchell¹, Mahoney² and Fowler³. The earliest probable case found in the literature by Mitchell was that which Ruysch of Amsterdam reported in 1691. Since then there have been about forty cases reported. Twenty-six of these cases were in males and fourteen in females. The majority of cases occurred in children. In only a few cases was there a history of the patient having swallowed a pin.

All types of appendicitis may arise from irritation due to pins. In some there are only mild symptoms which lead to chronic appendicitis with recurrent attacks. Most often there is a rapid perforation and abscess formation following the first symptoms.

The mortality of these pin cases is very high. In thirty eight of Mahoney's cases there were twenty-one deaths and seventeen recoveries. A percentage of 55.2 per cent deaths against 44.8 per cent recoveries. Of course, the older cases had a much higher mortality than the more recent ones.

The pin may be free from deposit and is rarely corroded. It is usually the nucleus of a fecal concentration which covers the head and most of the shaft.

The case I wish to report is that of a female, age 22, who came to the hospital October 27th, 1925. She had been having occasional attacks of

* Henry Ford Hospital.

rather sharp right lower quadrant pain for the past three years; none of them were accompanied by nausea, vomiting or fever, or were severe enough to confine her to bed. For a week previous to her visit to the hospital she had been acutely ill with pain in the right lower quadrant which was accompanied by nausea and vomiting and fever, and some localized tenderness. She had been told by two different doctors that she had acute appendicitis and was advised to have an operation. There was no history of having swallowed a foreign body. The night before her admission to the hospital, the pain became severe again after a period of twenty-four hours of comparative comfort. On examination her temperature was 98, pulse 96, respiration 20. Abdominal examination revealed a tender, firm mass over McBurney's point which seemed to be about the size of an orange. This mass was assumed to be an appendicial abscess. The white count was 15,500 with 75 per cent PMN. Urine and blood Wassermann were negative.

This patient was admitted to the hospital for drainage of the appendicial abscess. On opening the peritoneal cavity it was found to be clear. Adherent to the pelvic wall and behind the cecum was a large sausage shaped mass, brownish red in color which proved to be an enormously enlarged and thickened appendix. Considerable difficulty was encountered in freeing this mass and the distal end was broken. A pin surrounded by a large concretion was expressed in freeing it. The appendix was then removed. It was 7 cm. long and 14 mm. in diameter at the amputated end and 12 mm. at the distal end. In its center it had a diameter of 26 mm. The walls of the appendix were greatly thickened and indurated with the exception of the area in which the foreign body had lodged, which was about normal thickness. In places the lining of the appendix was ulcerated and necrotic. The ulceration extended deep into the muscle. The foreign body consisted of a pin which was surrounded by concretion about 8 mm in diameter. The point of pin was uncovered. Microscopic examination showed much oedema and diffuse infiltration by round, wandering cells, eosinophiles, polymorphonuclear leucocytes and hemorrhage. The patient had a rather stormy convalescence after the operation. The wound healed after about seven weeks, following which the patient had no recurrence of her symptoms and gained weight rapidly.

REFERENCES

1. Mahoney, S. A. Foreign bodies as a cause of Appendicitis. Boston Medical and Surgical Journal, 1921, Vol. 184, P. 113.
2. Mitchell, J. F. Presence of Foreign Bodies in the Appendix. Johns Hopkins Bulletin, 1899, Vol. X.
3. Fowler, R. H. Foreign Body Appendicitis. Amer. Journal Surg. 1912, Vol. 56, P. 427.

RUPTURED VENTRAL HERNIA

J. EDWIN WATSON, M. D.

DETROIT, MICH.

Report of a case of spontaneous rupture of a Ventral Hernia, with a subsequent abdominal fistula.

A survey of the literature fails to find any cases of large ventral hernias which have been strangulated and ruptured through the abdominal wall, leaving permanent fistula. I am reporting this one as an unusual case.

Mary Brown, a negress, 58 years old, was ad-

mitted to the Detroit General Hospital, December, 1926, complaining of a rupture.

Past History—Notes that she had childhood diseases: measles, chicken pox, scarlet fever and diphtheria, with normal recoveries. Typhoid fever 15 years ago with normal recovery. She had a burn about the face 13 years ago from gas explosion.

Menstrual History—Unessential. Married at the age of 18 years. She had six living children, five died in early childhood, one unexplained miscarriage.

Family History—Nothing of importance.

Present Illness—Twenty-five years ago following childbirth noticed a small tumor on the abdominal wall, which for a time was irritated. The swelling has persisted and gradually increased in size. On October 17th, 1926, the mass suddenly became much larger and was unable to completely reduce the mass. In a short while this broke and started to discharge fecal material. She had very little pain previous to the rupture.

Cardio Renal—Has had swelling of feet and legs with shortness of breath for past 15 years. Some headache and dizziness during the day. Nocturia, No. 3 or 4 times.

Respiratory—Slight unproductive cough.

Gastro-intestinal—Chronic constipation, recurrent generalized abdominal pains, and cramps, abdominal distention.

Physical Examination:—

A colored woman about 60 years of age weighing about 300 lbs.

Ears and Nose—No pathology.

Eyes—Ectopian of lids of both eyes with conjunctivitis. Vision fair. Pupils react slowly to light and accommodation.

Mouth—Pyorrhea. Tongue coated. Tonsils hypertrophied, slight tremor of tongue, with no speech defect.

Neck—Submaxillary and sublingual glands enlarged.

Chest—Breath sounds harsh. Mucous rales at both bases. No area of dullness.

Heart—Enlarged to the left. Aortic and mitral murmurs. Heart tones poor quality. Vascular: Pulse, 116 to 120 per minute. Blood pressure, 160/70. Vessels tortuous and sclerosed.

Abdomen—Muscle wall thin and flabby, pendulous and superimposed layers of fat. A tumor the size of 10 centimeters below the umbilicus and to the right discharging fecal material, with sloughing tissue about tumor mass. Skin irritated.

Genitalia—Lacerated cervix and perineum, senile outlet.

Extremities—Knee jerks sluggish. Oedema over tibia.

Mentality—Sluggish.

Laboratory—Blood, R. B. C. 3,100,000; W. B. C. 6,000; Hyb, 70 per cent; Poly, 70 per cent; Wassermann, negative.

Urine—Color, normal. Reaction, acid. Sp. Gra. 1020. Alb, trace, Sugar, neg.

Diagnosis—(1) Ventral Hernia with foecal fistula. (2) Ectropia of eye lids. (3) Myocarditis chronic. (4) Arterio-sclerosis.

Progress—Four weeks have passed, fistula has continue to drain fecal material. Care of the skin has healed irritated condition. No future surgical treatment has been used because of the physical condition of the patient.

MICHIGAN'S DEPARTMENT OF HEALTH

GUY L. KIEFER, M. D., *Commissioner* • Edited by MARJORIE DELAVAN

MEASLES EPIDEMIC OF 1926

An analysis of the incidence of measles in Michigan for the year 1926 reveals an epidemic the magnitude of which has not been surpassed during the past 15 years. During this year there were 40,658 cases of measles reported in the state together with 576 deaths.

What is the reason for the occurrence of an epidemic of such magnitude? There are two factors which account in a large part for such an occurrence. Of all the infectious diseases, measles ranks with smallpox at the top of the list as being the most contagious. In addition to this fact man is more universally susceptible to this disease than to any other, possibly except-

ing smallpox. With smallpox, however, we have a most effective means in vaccination to prevent the spread of this disease, while with measles we have no such effective preventive measure.

With such diseases as diphtheria and scarlet fever there is a tendency towards the development of natural immunity as a person grows older. This is not true with measles, as we find an adult who has never had this disease just as susceptible as a young child.

There is another factor which has been observed to take a part in the occurrence of an epidemic of measles. This is the tendency towards periodicity of such epidemics.

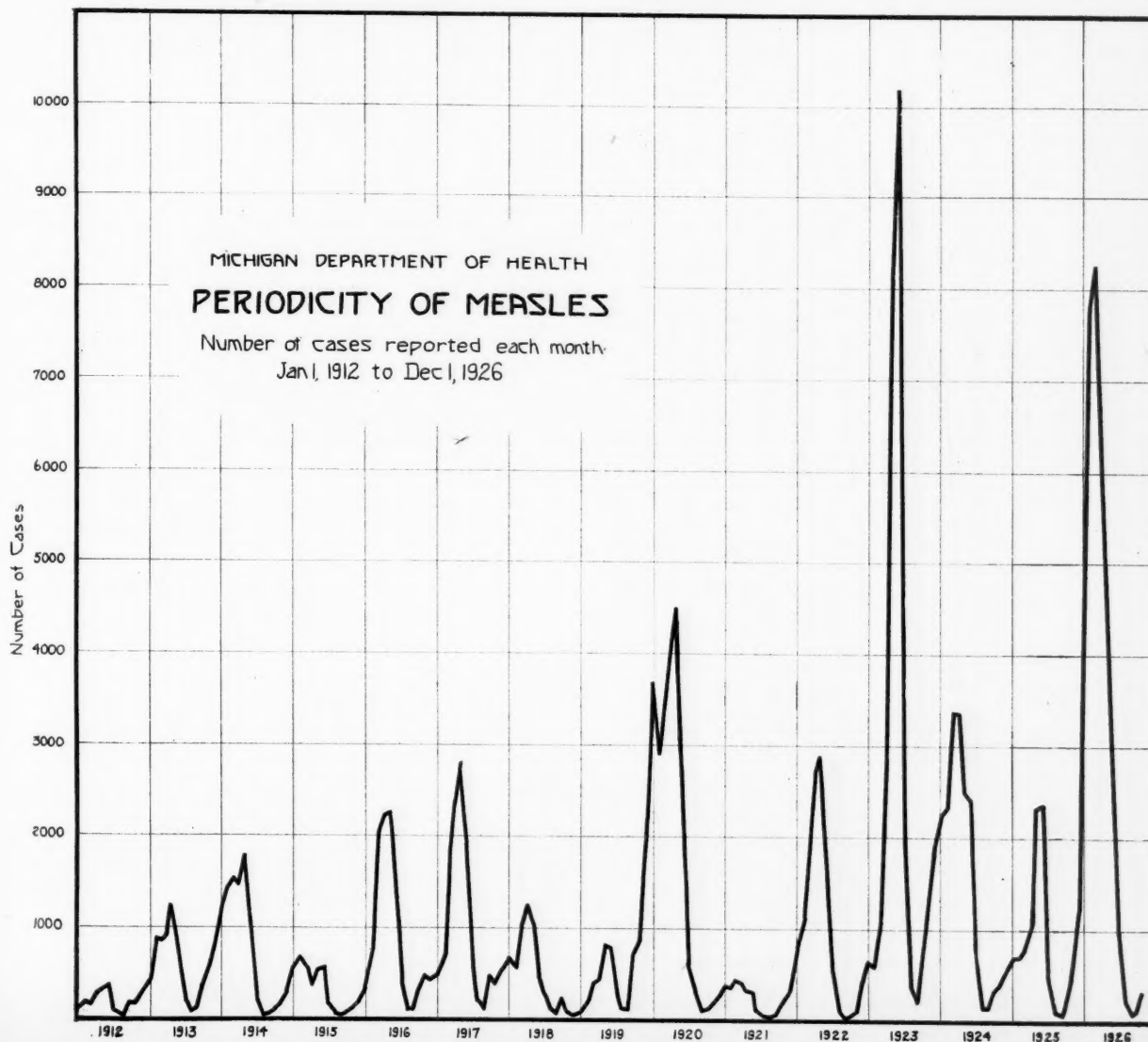


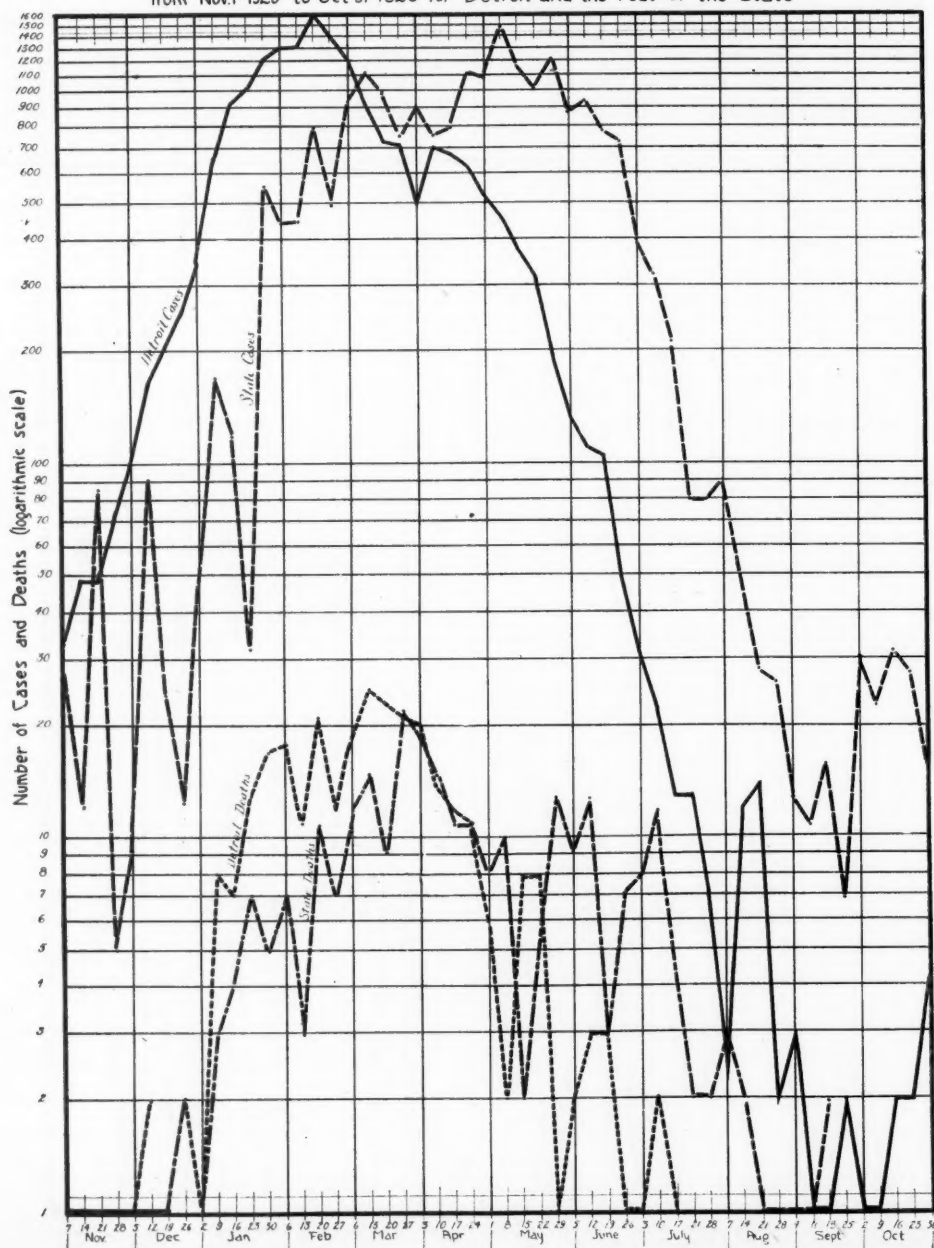
Chart 1 shows the number of cases of measles which have been reported each month in the state of Michigan for a period of 15 years. It is to be noted that there is a definite tendency towards periodicity of the epidemic waves. The time interval between valleys and peaks varies from one to three years. The interval between the larger peaks is quite regularly three years while with the smaller peaks the interval varies from one to two years. Various theories have been advanced as to the cause of such periodicity. However, the one most generally accepted is the accumulation of a sufficient number of susceptibles to make an epidemic possible.

It is observed in Chart I that the peak in 1923 rises higher than the one in 1926; however, the epidemic in 1923 was of shorter duration and consequently the total number of cases was much lower than in 1926. There were 30,041 cases with 258 deaths reported in 1923, while in 1926 there were 40,658 cases with 576 deaths.

During 1926 up to and including the month of November the number of cases reported was somewhat below that of the normal five-year average. In December, however, the number reported jumped to twice the norm with subsequent increases of over five times in January to nearly

MICHIGAN DEPARTMENT OF HEALTH MEASLES EPIDEMIC OF 1926

Number of Cases and Deaths Reported Each Week
from Nov. 1-1925 to Oct. 31-1926 for Detroit and the rest of the State



eight times the norm in February.

Chart 2 shows the number of cases and deaths reported each week from November 1, 1925 to October 31, 1926 in Detroit and the rest of the state. A logarithmic scale was used in order that all figures could be placed on one chart and thus be better visualized. Of the cases reported in Detroit there is a marked rise in the curve beginning in November which reached the peak or mode February 20, whereas, of the cases reported from the state, outside of Detroit, the curve does not begin to rise abruptly until the last two weeks in January. Of the cases reported from the state the mode is not reached until the 8th of May, or 11 weeks after the Detroit mode. The similarity of the two curves is very striking. The curve of the state cases corresponds very closely to that of the Detroit cases, following after an interval varying from six to eleven weeks.

The curves of the deaths reported by weeks from Detroit and from the remainder of the state are scarcely less interesting. The abrupt rise in both curves begins about the same time, January 2. The Detroit curve rises somewhat more rapidly and reaches the mode March 13, just three weeks after the mode of cases reported.

The state curve is bimodal. The first and highest mode occurs on March 27 or two weeks after the mode of the Detroit curve while in the number of cases reported there is an interval of 11 weeks between the modes. The second mode, somewhat lower than the first, occurs on May 29 or three weeks after the mode of cases reported for the state. It will be observed that this secondary mode in the death curve follows the mode of the case curve at the same interval as appears between the modes of cases and deaths in Detroit.

Is this three weeks interval between the mode of deaths and the mode of cases reported significant? Does it mean that in cases of measles terminating fatally, death occurs on an average three weeks after the onset of symptoms?

The peak of the curve of State deaths occurred in March, two weeks after a secondary peak in the number of cases reported but six weeks before the mode of cases reported. What is the reason for this? Are there any other factors which would tend to increase the mortality during the month of March? We immediately think of pneumonia, a disease which is most prevalent during the month of

March. Bronchopneumonia is one of the common and most fatal complications of measles and probably accounts to a greater or less degree for the occurrence of the mode of state deaths during the month of March as is the case with the Detroit mode instead of at the time of the secondary peak during May, some three weeks after the mode of cases reported.

W. J. V. D. and P. F. O.

PREVALENCE OF DISEASE

	December Report			Av. 5 years
	November 1926	December 1926	December 1925	
Pneumonia	363	523	715	546
Tuberculosis	242	297	432	379
Typhoid Fever	50	24	103	79
Diphtheria	710	593	453	585
Whooping Cough	492	502	684	427
Scarlet Fever	970	1,224	1,386	1,311
Measles	324	413	1,215	873
Smallpox	83	79	75	181
Meningitis	3	7	13	10
Poliomyelitis	6	5	1	5
Syphilis	1,308	1,058	1,255	903
Gonorrhea	912	772	799	746
Chancroid	10	3	6	9

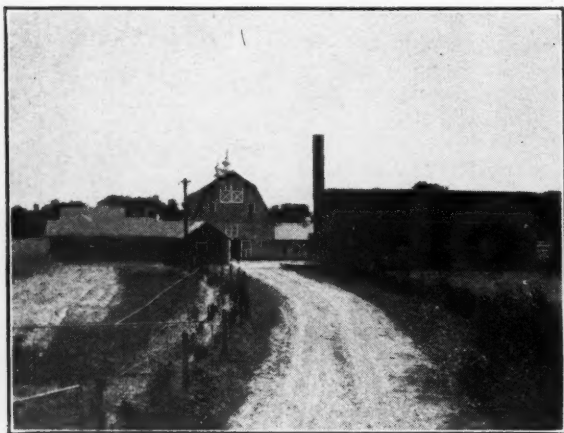
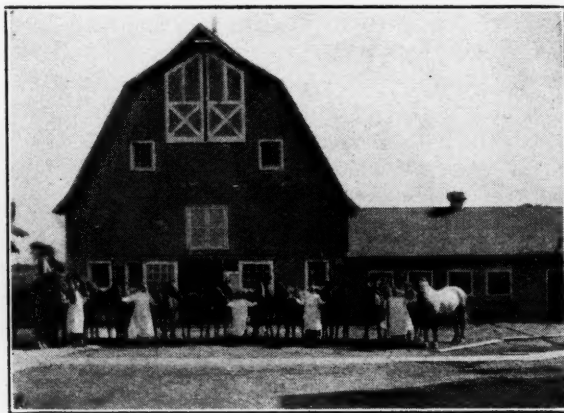
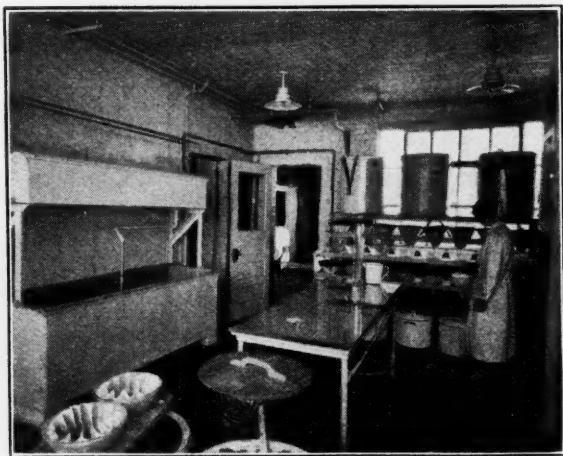
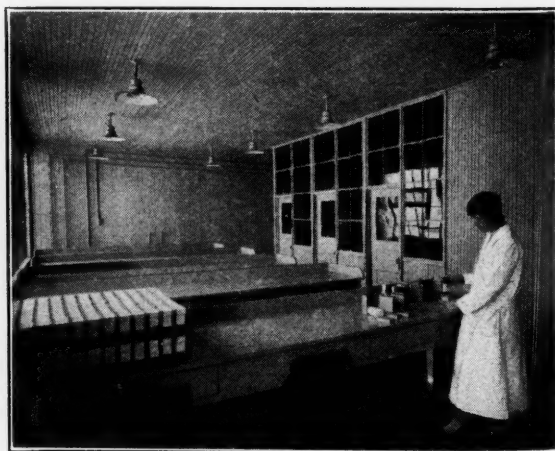
CONDENSED MONTHLY REPORT

Lansing Laboratory, Michigan Department of Health

December, 1926

	+	-	+ -	Total
Throat Swabs for Diphtheria				1634
Diagnosis	68	499		
Release	373	477		
Carrier	11	206		
Virulence Tests	18	7		25
Throat Swabs for Hemolytic Streptococci				666
Diagnosis	194	257		
Carrier	28	187		
Throat Swabs for Vincent's	18	549		567
Syphilis				4980
Wassermann	1	3		
Kahn	845	4041	88	
Darkfield		2		
Examination for Gonococci	115	1185		1300
B. Tuberculosis				364
Sputum	77	258		
Animal Inoculations	2	27		
Typhoid				117
Feces	15	52		
Blood Cultures	1	18		
Urine		3		
Widal		28		
Dysentery				29
Intestinal Parasites				12
Transudates and Exudates				160
Blood Examination (not classified)				544
Urine Examinations (not classified)				317
Water and Sewage Examinations				369
Milk Examinations				89
Toxicological Examinations				7
Autogenous Vaccines				5
Supplementary Examinations				172
Unclassified Examinations				724
Total for the Month				12081
Cumulative Total (fiscal year)				79235
Decrease over this month last year				3477
Outfits Mailed Out				15311
Media Manufactured, c.c.				390900
Typhoid Vaccine Distributed, c.c.				1405
Diphtheria Antitoxin Distributed, units				27294000
Toxin Antitoxin Distributed, c.c.				33450
Silver Nitrate Ampules Distributed				3404
Examinations Made by Houghton Laboratory				1281
Examinations Made by Western Michigan Division Laboratory, Grand Rapids				4929

MICHIGAN DEPARTMENT OF HEALTH BIOLOGIC PRODUCTS PLANT

*General view of Biologic Plant, west side**Horse barn and bleeding rooms**General view of Biologic Plant, south side**Concentration room**Small animal storage**Filling and packing room*

EDITORIAL DEPARTMENT

EDITOR: Frederick C. Warnshuis, M. D., F. A. C. S.

ADDRESS ALL COMMUNICATIONS TO THE EDITOR—1508 G. R. NAT'L BANK BLDG., GRAND RAPIDS, MICH.

STATE COMMISSIONER OF HEALTH

Governor Green's appointment of Dr. Guy L. Kiefer of Detroit as Commissioner of Health is met with universal approval and hearty endorsement. We are wholly confident that his administration will be characterized by efficiency, effective, sane health conservation activities, accepted measures of prevention and consistent methods of public education. The interests of the public will be paramount still not unconcerned with the interests of the profession. We do not look for pernicious measures or methods conducive to extended paternalism.

Dr. Kiefer requires no introduction to the profession, the public or to health agencies. A noble reputation is his by reason of his years of labor as a health official and his constructive contributions to the science of preventive medicine—in fact he is a pioneer blazing the trail and establishment procedures that have gone far in conserving the public's health welfare. He is so recognized locally and throughout the nation.

Dr. Kiefer in accepting this appointment is doing so at a considerable personal and financial sacrifice. Enjoying as he does a lucrative consulting practice in Detroit, he relinquishes it to render a state service that is entirely inadequately compensated. The call for service came to him, after much persuasion he accepted. In doing so he has set a most noble example, that redounds with credit through him to the entire profession. It is a splendid contribution, characteristic of the profession and one to which we will refer with pride for all time.

COMMITTEE APPOINTMENTS

Death, as noted in our last issue, created vacancies in two of our standing committees. These vacancies have been filled by President Jackson who announces the following appointments.

Dr. A. M. Hume of Owosso to succeed Dr. D. Emmett Welsh as a member of the Legislative Committee.

Dr. Walter H. Winchester of Flint to succeed Dr. Herbert M. Rich as a member of the Committee on Tuberculosis.

APPENDICITIS

Last month we imparted the statistical report of recorded maternal deaths in the state. We suggested that the results be studied by our County Societies in order that local factors might be ascertained with the view of instituting measures that would reduce the mortality rate. With a similar purpose in mind we are appending hereto the mortality rate in appendicitis, covering a five year period.

Study of this table reveals several outstanding facts. In five years there were 3,132 deaths from appendicitis in Michigan, a yearly average of 626 deaths. In 1921 there were 603 deaths while in 1925 there were 729 deaths. This is rather a startling condition and a goodly part of these deaths—yes, a majority—could have been prevented. It is an accepted fact that every death from appendicitis is preventable. Death follows because somebody erred: Either the patient called a doctor too late or declined early operation; the doctor erred in diagnosis or failed to urge operation; lastly, the surgical technic and post-operative treatment was bad.

Certain clinics and hospitals report year after year an appendicitis mortality of from 1 to 4 percent. Some six months ago we compiled a study of 11,400 cases, acute and chronic. The mortality was 2.9 per cent while in 5,736 acute cases it was 4.23 per cent. These figures were from 35 hospitals. The query is pertinent: Is your county reflecting an average mortality and if not, why not? That is a topic for discussion and investigation at your Society meeting.

A death rate of 729 cases in one year in Michigan, from appendicitis is uncalled for and unnecessary. It indicates the need for the institution of educational measures for both doctors and the public to reduce this fatality rate by at least 50 per cent. Your County Society should take the initiative.

APPENDICITIS

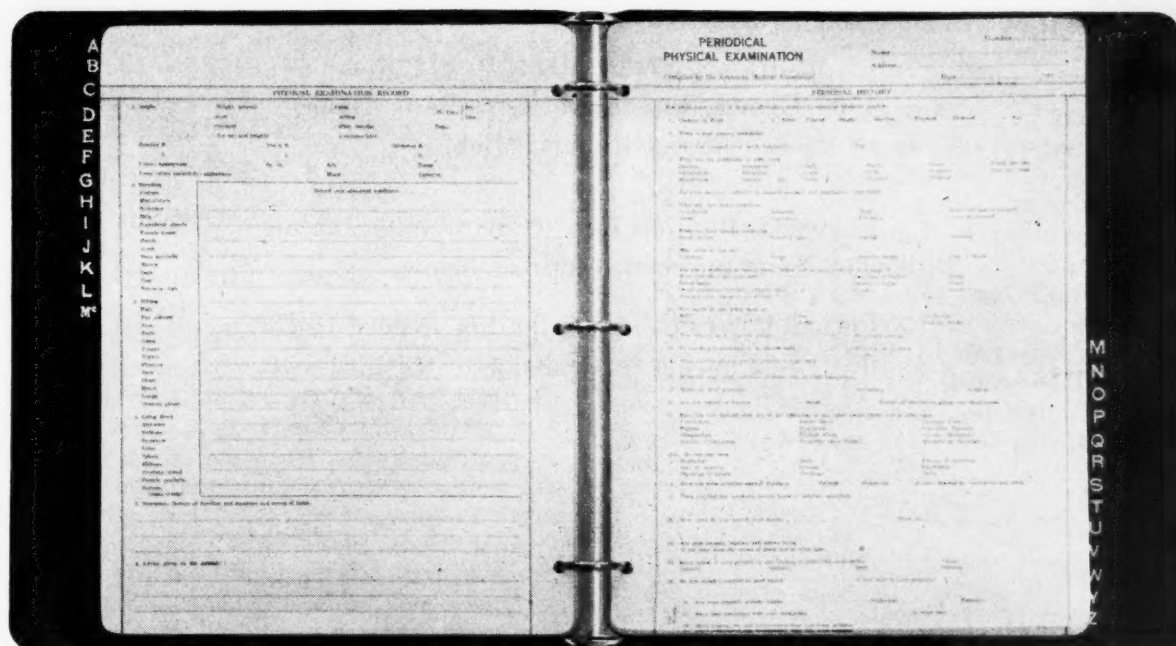
STATE AND COUNTIES						Total	Average	Average
	1921	1922	1923	1924	1925	Five Years	Five Years	Rate Per 100,000 Population
STATE	603	534	629	637	729	3,132	626	16.2
1 Alcona	2			3	1	6	1	16.3
2 Alger	3	2	3	3	2	13	3	27.1
3 Allegan	9	7	3	9	3	31	6	15.8
4 Alpena	5	1	3	3	2	14	3	16.7
5 Antrim				2		2	0	
6 Arenac			1	1	1	3	1	10.5
7 Baraga						0	0	
8 Barry	4	6	1	4	4	19	4	18.4
9 Bay	20	10	21	14	19	84	17	24.0
10 Benzie		1	1	2		4	1	14.4
11 Berrien	8	7	5	7	9	36	7	10.6
12 Branch		1	5	3	2	11	2	8.3
13 Calhoun	13	18	10	14	11	66	13	16.6
14 Cass	2	3	4	4	1	14	3	14.5
15 Charlevoix	1	3	2	2	3	11	2	12.7
16 Cheboygan		2	3	1	1	7	1	7.1
17 Chippewa	7	6	3	2	5	23	5	19.8
18 Clare	1			1		2	0	
19 Clinton	2	3		3	2	10	2	8.5
20 Crawford	1		1	1		3	1	23.3
21 Delta	9	2	6	4	7	28	6	19.0
22 Dickinson	4	3	3	3	2	15	3	15.3
23 Eaton	4	5	4	3	3	19	4	13.5
24 Emmet	13	4	7	7	10	41	8	50.7
25 Genesee	22	13	15	21	20	91	18	11.6
26 Gladwin					0	0	0	
27 Gogebic	7	9	6	4	6	32	6	16.2
28 Gd. Traverse	10	2	4	6	6	28	6	30.7
29 Gratiot	4	3	3	6	5	21	4	11.1
30 Hillsdale	6	1	7	1	4	19	4	14.1
31 Houghton	8	9	14	15	16	62	12	16.6
32 Huron	9	4	7	6	5	31	6	18.0
33 Ingham	9	11	17	16	16	69	14	15.4
34 Ionia	4	5	1	2	2	14	3	8.8
35 Iosco						0	0	
36 Iron	5	3	4	3	2	17	3	12.5
37 Isabella	5	2	4	2	2	15	3	13.1
38 Jackson	12	10	14	14	14	64	13	16.3
39 Kalamazoo	14	15	16	11	18	74	15	19.8
40 Kalkaska						0	0	
41 Kent	35	38	33	34	43	183	37	19.4
42 Keweenaw		1		2	1	4	1	15.7
43 Lake					1	1	0	
44 Lapeer	6	5	3		4	19	4	15.2
45 Leelanau		1				1	0	
46 Lenawee	4	4	6	4	3	21	4	8.2
47 Livingston	3		2	2	3	10	2	11.2
48 Luce			1	2	4	7	1	14.5
49 Mackinac	1		2	1		4	1	12.4
50 Macomb	4	10	3	6	13	36	7	17.6
51 Manistee	2	2	4	3	5	16	3	14.3
52 Marquette	12	5	10	5	10	42	8	17.0
53 Mason	8	3	3	5	5	24	5	25.1
54 Mecosta	5	9	4	8	3	29	6	33.7
55 Menominee	5	4	5	8	7	29	6	25.1
56 Midland	1		1		2	4	1	5.4
57 Missaukee	1	1				2	0	
58 Monroe	4	3	1		3	11	2	5.1
59 Montcalm	1	3	4	4	3	15	3	9.7
60 Montmorency						0	0	
61 Muskegon	5	7	12	11	11	46	9	12.8
62 Nawaygo	3	3	1	4	1	12	2	11.4
63 Oakland	7	5	11	12	11	46	9	8.8
64 Oceana	1	3	1	1	3	9	2	4.8
65 Ogemaw	3	3	1			7	1	12.7
66 Ontonagon		2			1	3	1	7.2
67 Osceola	2	1		3	4	10	2	13.0
68 Oscoda						0	0	
69 Otsego						0	0	
70 Ottawa	4	4	5	8	9	30	6	12.3
71 Presque Isle	1					1	0	
72 Roscommon						0	0	
73 Saginaw	20	11	18	18	25	92	18	17.2
74 Sanilac	7	3	2	7	9	28	6	19.0
75 Schoolcraft		1			1	2	0	
76 Shiawassee	3	3	6	4	4	20	4	10.7
77 St. Clair	12	11	7	7	6	43	9	14.8
78 St. Joseph	1	2	2	3	6	14	3	10.8
79 Tuscola	8	5	7	5	8	33	7	20.7
80 Van Buren	4		4	3		11	2	6.4
81 Washtenaw	19	20	13	14	7	73	15	29.0
82 Wayne	182	184	256	240	303	1,165	233	19.0
83 Wexford	6	5	3	10	6	30	6	32.1

PERIODICAL PHYSICAL EXAMINATION EXAMINATION BLANKS

Doctor:

This blank is devised by the A. M. A. They are essential to you in making the physical examination, expediting the examination, filing and for future record and reference.

We have provided them in a convenient, durable form as here illustrated:



1. Flexo—Dura-Leather Cover—Loose Leaf Binder.
2. Alphabetical Index—Leather tags.
3. 100 A. M. A. Examination Blanks.

Net Cost Price (Delivered) \$5.75

(Binder will hold 600 blanks.)

You need this outfit in your office. It has been assembled for you.
Use the next page to send in your order.

PERIODIC EXAMINATION RECORD

—ORDER—

MICHIGAN STATE MEDICAL SOCIETY,
1508 Grand Rapids National Bank Bldg.,
Grand Rapids, Mich.

Enclosed find \$5.75. (Check must accompany). Send me to the address below.

Periodic Physical Examination Record Outfit,
as illustrated on the reverse side of this order to:

Dr.

Street

City

WHISKY

We didn't say much last month regarding the United States Supreme Court decision upon the restriction of "one pint in ten days" prescription. We still feel it's a "hulla-bulu" (whatever that is) about something the profession had better have remained silent upon these past six or more years. Probably we'd better become mum right now. However, the court's decision has created so much medical journalistic comment that we are moved to the recording of the following deductions:

Time was when whisky was employed in medicine as a stimulant, but time has, as it so often does, proven that we can get along without whisky. Turning to hospitals and case reports we find that the morbidity and mortality is no greater in hospitals where liquor or whisky is not prescribed than in hospitals where it is used. Oh, yes, we know about champagne in nausea, sometimes it did do good, but so does a stomach lavage and a little attention to diet. Right down in your heart, you know that if the drugs we possess are ineffectual, whisky won't do much more. While maybe you can cite the case of pneumonia, "flu," diarrhoea or some other acute condition in which you credit whisky for saving the patient, you can't absolutely swear or prove it was whisky that saved the day. After all, aren't we just too stubborn to want to give up whisky, loathe to place it in the discard, just as we were with a number of other pet remedies and formulas which the Council on Pharmacy and Chemistry revealed to us as being inert and useless? Yes, we are aware that eminent doctors testify and assert that whisky is a useful, valuable, therapeutic agent. But we recall also that similar eminent medical men gave testimony too as to the extreme value of strychnine, cactine, aconite, and a dozen other now obsolete drugs and formulas. We have no fear that limitation on whisky prescriptions will increase mortality or intensify suffering.

The point is also made that the Supreme Court ruling invades the practice of medicine, encroaches upon the rights of doctors and institutes control and supervision over individual practice and therapeutic judgment—in other words, state or governmental control of doctors. Yes, in this single instance we grant that argument. Still, we are not inclined to become deeply alarmed, nor do we fear that our individual rights are to be further invaded, or that this is the opening wedge of governmental

control. The members of the Supreme Court are not fools. They can see around the corner and are not lost or deluded by legal verbage. They are familiar with the Constitutional Amendment and the Volstead law. They also know what is going on in daily life, how whisky is being consumed as a beverage though it be obtained on prescription and we can't kid ourselves that any one of the justices was unconcerned as to existing conditions. They sought rather to inhibit the whisky traffic and not tell you what you can not prescribe as a doctor. We do not believe that should the question of chemicals, drugs, or morphine dosage ever be presented to the Supreme Court that that tribunal will ever rule or hand down an opinion that will restrict a doctor in their use or dosage. We are firm in opposition to state medicine or state control of medicine and will fight to the last ditch to defeat such attempts. We do not believe that this decision can be interpreted as a call to arms.

As a profession we will be far better off if we promptly close this whisky episode. If it's booze we want—well—Ontario went wet. Justice is oftentimes tempered with reason—also by conception of what actually is happening. The Supreme Court continues to merit our firm faith and our profession is not going to the dogs because of this ruling. Just let the teapot settle, the tempest can't cause a second flood. No, we haven't a New Year's hangover, either.

ALPENA COUNTY

In response to your request for a history of the Alpena Medical Society the following information is given:

In 1901 the Thunder Bay Medical Society was organized and held regular meetings until 1905, when the new organization of the Michigan State Medical Society went into effect. At that time the requirements for membership were such that several of our local physicians were not able to belong. In 1911, when the requirements were made more liberal, every local physician became a member and we have had a 100 per cent membership ever since. The following have acted as Presidents since that time: 1911, Dr. J. D. Dunlop; 1912, Dr. S. T. Bell; 1913, Dr. J. W. Small; 1914, Dr. D. A. Cameron; 1915, Dr. W. A. Secrist; 1916, Dr. John Purdy; 1917, Dr. F. J. McDaniels; 1918, Dr. Leo Secrist; 1919, Dr. E. E. McKnight; 1920, Dr. W. A. Secrist; 1921, Dr. Geo. Lister; 1922, Dr. D. A. Cameron; 1923, Dr. W. A. Secrist; 1924,

Dr. John Jackson; 1925, Dr. S. T. Bell; 1926, Dr. S. T. Bell. During this period, Dr. C. M. Williams has generally acted as Secretary.

The Society has held regular monthly meetings on the third Thursday of each month. The Society is one of the organizations in the reciprocal exchange of medical programs. In 1912 through their efforts the Alpena Hospital Association was formed which resulted in obtaining a hospital for Alpena. The Society has co-operated with the health authorities in immunizing the public against smallpox, typhoid fever and diphtheria. Much of this immunization has been conducted through our organization without expense to the taxpayers.

Once or twice in every year some organization has been our guests at one of our meetings. These organizations have been the Ministerial Association, the Rotary Club, Nurses, Hospital Association, etc.

Truly yours,
C. M. Williams.

STATE MEDICINE

The doctors have begun to get in their shots to Monday's statement by Surgeon General Cumming of the United States health service, delivered at the public health conference in Lansing, to the effect that medical service should be under state and federal control.

"Such a scheme," declares Dr. Angus McLean of Detroit, "would destroy the scientific and social incentives which have brought the great majority of medical men into the profession, and upon which the advance of medical science must depend. It would be a mistake to reduce all medical service to the type of dead-level and directed routine work typical of a factory. I hope the medical profession has too much strength, pride and dignity, and sees too clearly the service it owes to society, ever to submit to its direction, control and remuneration at the hands of politics."

That is a strong and logical answer from a public-spirited physician. It probably represents the general reaction of physicians throughout the United States to Surgeon General Cumming's proposal, as well as the public point of view, State medicine is medical socialism, and a nation of private enterprises does not react kindly to it.

The bugaboo of physicians in this re-

gard is the case of England, where state medicine on the insurance plan is actually in effect. But the important difference is that Surgeon General Cumming is no Lloyd George. The British plan of contributory insurance for sickness and invalidity was the exclusive achievement of the great little Welshman, who fought it through despite the original opposition of practically the entire British medical fraternity, the Conservative party and most of the British public.

Until somebody with the genius and conviction of Lloyd George rises to make state medicine a crusade there seems to be little danger of its adoption in America. We have accepted federal maternity benefits only with much protest. City clinics for the poor must be circumspect to an almost ridiculous point to avoid censure. Even the plan of state compulsory compensation insurance for automobile accident victims meets the cry of "Socialism!" On the whole it seems rather unlikely that Surgeon General Cumming's views will prevail in the United States. It is true that a large number of "in-between" people, neither destitute nor capable of paying without deprivation the necessarily high fees of modern hospitals, physicians and nurses, are caught in something like a millstone as matters stand. The clinics are often closed to them even if their sense of independence would not reject any resort to charity service. The consequence is a habit of dodging the doctor until the last possible moment, which often is the most expensive plan in the end.

Possibly the answer in America will be a wider popularization of the plan of preventive medicine, the annual health examination, for example, and an increase of private sickness insurance.—Grand Rapids Press.

COMMITTEE ON HISTORY

It is a monumental task and withal a highly important one, that a Committee of the State Medical Society is designated to perform—that of compiling a Medical History of Michigan. This is a work that perhaps should have been begun years ago and carried on in connection with that of the State and County Historical Societies. Through the lapse of time much of the personal and the anecdotal which lend a piquant flavor to a literary undertaking of this sort is necessarily lost. Michigan has been exceptionally favored in physician personnel and the drama of daily doings in which its medical actors

participated during the romantic period of the State's early development, should be a fascinating record. How much material is still available to this end is problematic. It need scarcely be hoped that the present Committee can do more than make a crude beginning but if it should succeed in assembling considerable data of importance for its successors not a little will have been accomplished.

To this end the Committee urgently solicits the membership of the Michigan State Society to co-operate. Records of the lives of pioneer physicians, their trials and hardships, their equipment and their environment, are much desired. Their letters, diaries, prescriptions, the correspondence and newspaper notices concerning them and throwing light upon their doings; their achievements and failures, their personalities and characteristics, their public activities, their social and neighborly values, their political trends, their relationships with one another, the causes they espoused, their methods of treatment, their claims to discoveries and originality—and last of all, the handicaps they encountered in their undertakings. All of this would be of vivid interest from the humanistic as well as professional angle.

Whatever traditions or memoranda have been transmitted concerning medical men, in the company of early explorers, the Jesuits and the missionaries, should be recorded. Already it has been revealed that a medical officer accompanied La Salle but his name is not yet known.

It is hoped to feature Indian medicine and the customs of native tribes in this regard in the Medical History. Anecdotes of old settlers or memoranda concerning these matters would be much appreciated by the Committee.

Devastating epidemics, sporadic diseases, the record of typhoid, "malaria," "ague cake," and "congestive chills," of "inflammation of the bowels," should find place in any account of pioneer medicine in Michigan.

The foregoing and medical journalism and teaching, medical societies and boards, outstanding discoveries, medical politics and controversies, scandals and malpractice suits, hospitals, training schools, and medical institutions, the war records of physicians, public health activities, biographies of distinguished men and noteworthy books and monographs, are all subjects, in the opinion of the Committee deserving treatment.

Asking assistance from all the State Society membership in assembling such material and with thanks in advance, we are

Faithfully yours,

C. B. BURR,
J. H. DEMPSTER,
W. J. KAY,
W. H. SAWYER,
J. D. BROOK,
Committee.

FILE YOUR PROTEST

The 1925 legislature appropriated a half million dollars for a new state tuberculosis sanitarium. Through the political juggling of a previous administration this building appropriation, though collected from the taxpayers, was not available. Within the past month activity, delayed, has resulted in the selection of Ann Arbor as the site for this new sanitarium.

Following this announcement, for political reasons or else fear that the Howell Sanitarium would be abandoned, a bill has been introduced seeking to repeal the law that made this new sanitarium possible. The Council urges that every County Society and member protest against the passage of this repeal bill.

Michigan has far too few beds available for our tuberculous. The Ann Arbor site is extremely desirable for it assures a staff of expert medical men. Howell will still continue and expand. We need this new sanitarium. Convey your views to your senators and representatives. Do it now, and forcefully.

THE CONTROL OF DIPHTHERIA

Notwithstanding the fact that the prevention of diphtheria is engaging the attention of city boards of health and private practitioners throughout the country, and many thousand immunizing treatments have already been given, it will be a long time, we fear, before diphtheria antitoxin goes out of use, or even before the need for it becomes appreciably less than it is now. Much more extended work along the line of prevention will have to be done than has as yet been done, before diphtheria disappears from the list of children's diseases.

The makers of diphtheria antitoxin, therefore, are to be commended for doing their utmost to improve the quality of the antitoxin and the syringe package in which it is put up. Parke, Davis & Co., who began supplying diphtheria antitoxin more than thirty years ago, announce some recent developments in the purification of this product and the concentration of the dose volume. See their advertisement in this issue, "Latest Refinements in Diphtheria Antitoxin."

MONTHLY COMMENTS

Medical—Economic—Social

Through the combined efforts of Senators Bingham of Connecticut, Reed of Missouri, and Phipps of Colorado, there was presented to the Senate, a few days ago, vigorous opposition to the pending bill to extend for an additional two years the provisions of the Sheppard-Towner law.

January 5, Senator Phipps of Colorado, chairman of the Committee on Education and Labor, presented the protest of the American Medical Association against extension of the Sheppard-Towner Act on the ground that the law is a product of political expediency and is not in the interest of the public welfare; that it is an imported socialistic scheme unsuited to our form of government; that it unjustly and inequitably taxes the people of some of the states for the benefit of people of other states for purposes which are lawful charges only for the people of such other states; that the law does not become operative until the respective states pass enabling legislation.

Senator Bingham read to the Senate the views of President Coolidge in his budget message to Congress, wherein he said:

"I have referred in previous budget messages to the advisability of restricting and curtailing federal subsidies to the states. The Maternity Act offers concrete opportunity to begin this program. The states should now be in a position to walk alone along this highway of helpful endeavor, and I believe it is in the interest of the states and the federal government to give them the opportunity."

Senator Bingham charged the proponents of the Sheppard-Towner Law with inserting in the Congressional Record statements from President Coolidge which did not include the foregoing positive recommendation in opposition to the Sheppard-Towner program.

Senator Bingham also read to the Senate an editorial from the New England Homestead of December 11, 1926, which declared:

"The purpose back of the present effort is to gain time so this form of federal aid may be fastened upon the people as a permanency. Instead of protection for mothers and infants . . . the scheme now blossoms out as a full-fledged public health measure. Not content with seeking to dominate our homes and schools, federal bureaucrats would oust the states from authority over the public health."

In urging that federal bureaus should not be engaged in work of this kind, Senator Reed of Missouri said:

"We have in the United States many wonderful universities at which it is presumed the last word of medical lore is taught to medical students. . . . Nurses are taught in schools and colleges and work immediately under the direction of physicians. The vast machinery exists; and I want to know what a board of five or six officials in Washington can do. I cannot speak now with reference to the present board, for I do not know its personnel; but at the time this bill was here for debate on a previous occasion that board consisted, to all intents and purposes, of one woman

—an unmarried woman—aided by a number of other unmarried women, women who had never been mothers, of course, for they had never been married. They were not learned in medicine. They were not even trained nurses. I want to know what knowledge that kind of a board can contribute to the medical fraternity of the United States, which has open to it all of these avenues of learning to which I have adverted."

There was also read to the Senate an article entitled "Further Falacies of the Sheppard-Towner Propaganda," prepared by Dr. William C. Woodward, executive secretary, Bureau of Legal Medicine and Legislation of the American Medical Association.

Proponents of this legislation are endeavoring to show that the medical profession is not a unit in opposing it and have presented to the Senate a telegram from Dr. Charles H. Mayo of Rochester, Minn., stating that "the Sheppard-Towner Act should be continued because inestimable public good results directly from this expenditure and also indirectly by stimulating individual states to carry on this valuable educational work."

In accordance with the wish of Senator Copeland of New York, a letter was also presented from Dr. Haven Emerson, professor of public health administration, Columbia University, New York, in which he said in part:

"No one who has the least acquaintance with the facts of maternal and early infant mortality in the United States doubts that the administration of federal and state services under the Sheppard-Towner Act has contributed materially to the saving of lives of the mothers and babies of this country.

To permit the work under this act to lapse for lack of continuing appropriations for at least another period of three years would be to confess that the Congress is incapable of intelligent expenditure of the tax money, and that its members consider lives are less valuable than dollars.

Thoughts while in a Chiropodist's Parlor: Corns are pestiferous and soul damning as well as temper busting. Corn plasters and the fifty-seven and one remedies are of slight value. Our own old salicylic acid, cannabin and collodion formula is as effective as any. Course it's poorly fitted shoes but Holy Gee, a shoe clerk ought not to sell you too narrow or too short a shoe. You damn them and nearly everyone else when the corn roars and of course as your paunch protrudes and your knives are dull you wend your way to the footman—oh, excuse, chiropodist—licensed by a state board, diplomas and everything, 'coz we doc's neglected to perfect this type of service. Reception room, small but neatly furnished—all treatments by appointment, hence no crowded waiting room. Treatment room nicely furnished with automatic chair and specially designed foot rest. Instrument tray, sterilizer—glass table and array of solution and ointment bottles. Off come the shoes and socks—a survey of your "dogs." "No wonder—wrong, ill-fitting shoes, distorted toes, twisted metatarsals, rota-

tion of os calcis, six or seven ligaments strained, socks might be bigger—(we wear 11's), "You used to do a lot of running"—(We'll say we did and still do to keep out of red at the bank) and a similar line of patter that didn't impress us but which would be impressive to an unknowing public. A compress of alcohol, a slick job of paring, adeptness in cutting some adhesive plasters, a nail trim, dusting with talc—on with the socks and brogans—and, Oh, Boy, what a grand and glorious feeling of relief. How much? Our price is three dollars but give us a buck and we'll call it square. Meditation: Few docs would or could render such service—hence no wonder the public consults us no more for corns, callus or bunions. A chiropodist will excell any doc or surgeon in skill and deftness in strapping toes, arches or ankles. Why did we cease? Moral: It's neglect of the small things, the details and deftness that has caused us to relinquish several of the minor branches, and we'll relinquish major ones, too, if we don't watch out. Six dollars an hour for nine hours is \$54 dollars a day in a warm office. Pretty soft.

The Health Legislative Bureau met for organization at the Hotel Olds, Lansing, Thursday evening, December 16th. Those present were, Doctors Jackson, Olin, Haze, Mac Cracken, Vander Slice, Mr. Werle and Miss Wheeler.

Dr. Haze was chosen chairman and Dr. Vander Slice secretary. Following the organization, questions of general policy of the Bureau were discussed and finally the following general rules were laid down for its guidance:

1. The Bureau shall act as a general coordinating body and shall discuss and pass upon the proposed legislation presented by the several groups represented. Its decisions naturally cannot be definitely binding on any group so far as its program is concerned.
2. Publicity shall be through the individual groups and not through the Bureau.
3. All proposed legislative measures shall first be presented to the Bureau for consideration before publicity be given and before introduction into the legislature.
4. After action on any proposed legislation by the Bureau the result of such action shall be reported back to the participating agencies through their representatives.
5. Any special health legislation if deemed necessary by the Bureau may be assigned to any one of the participating agencies for preparation.
6. The Bureau favors as little legislative action at the coming session of the legislature as may be.

E. R. Vander Slice, Secretary.

Of all the asinine projects, the one advanced in the following telegram leads:

"A movement by prominent business men, physicians and others is being considered under the title of 'Association Against Impure Liquor Incorporated.' The purpose of the association is to discourage the purchase of any liquor from bootleggers but rather where medicinal whisky is required that same be secured through druggists and prescriptions from physicians and to prevail upon all prominent and reputable physi-

cians to take out permits to issue such prescriptions. This movement is in the interest and preservation of public health. Can you consistently approve the idea and may we depend upon your moral support in the launching of the association. Please wire full expression at our expense.

"Charles Capehart, organizer 'Association Against Impure Liquor,' Times Building, New York City."

Our answer is an emphatic NO. The proposition of making the doctors the bartenders of the nation is insulting. Neither do we purpose being made the tool for others. If those wanting liquor cannot bring about the proper legislation to secure it, they certainly will have our endless opposition if they endeavor to obtain whisky in this manner. We presume someone is reaping a lucrative salary as secretary of this, another ridiculous league—of which we have far too many.

A Scotch preacher, engaged by a congregation, on the second Sunday in his new charge preached the same sermon that he did on his first Sunday. This caused some comment. On the third Sunday he again preached the same sermon. After the services the elders interviewed the preacher and told him he had not been engaged to preach one sermon and wanted to know how long he intended preaching that sermon. The hoary preacher replied: "I preach that sermon till you practice what I preach."

That is somewhat the position in which your Council and officers find themselves. They will continue to preach organized efforts, organized unity and organized achievements everlastingly and till the profession exemplifies complete accomplishment of the purposes that justify our organization. We shall urge local officers and committees to continue along the same lines. The end will not be recorded until every member gives evidence of practicing the principles that organized medicine stands for and aspires.

Anywhere from three to four times a month do we receive a request for a list of Michigan doctors or a list of doctors in one, two or more counties. We are unable to fill the request because our mailing list is on addressograph plates arranged according to railway mail routes and not by towns or counties. Our other list of members is on Kardex filing trays, arranged by Councilor District divisions and to copy such a list would require one person's time for three days. These addresses by state, county or cities, may be obtained from the Directory of the American Medical Association which is accurate and dependable. This directory can be purchased from the A. M. A. by states or for the whole country. We are making this statement for our members information.

There has been evidenced this past year a renewal of interest in the life of Washington and considerable discussion ensued. We are reprinting in this issue, by courtesy of the *Virginia Medical Monthly*, a most interesting narration of the "Last Illness and Death of Washington," by Dr. Walter A. Wells. We were intensely interested in this medical narrative and felt certain it would appeal and please our readers.

This article has created anew a desire to awaken in Michigan a more evidenced interest in

the history of medicine and in the biographies of outstanding leaders who influenced the development of practice. Personally, we have ever been an avid reader of these biographies, research complications and historical narrations. Much pleasure and profit have resulted.

As President Jackson stated at a recent County Meeting—"Every patient coming to you with a history or symptom of blood in their urine or passing blood presents a direct challenge to your diagnostic acumen to ascertain the cause and location of the hemorrhage." To this we would add that no doctor should permit the day to close until he had instituted measures to arrive at a diagnosis. In other words, never trifle, neglect or consider lightly any case of hematuria. Do not temporize with a favorite prescription and do not describe it as the result of a strain. Promptly go carefully into the history, physical examination and arrange for a cystoscopic and X-ray study. The early discovery of the cause will prevent in many instances an eventual fatality.

Evidently our members are busy for we didn't receive many comments upon our new appearance. Probably silence can be construed as approval, still we'd like to hear some shouting. If you can tender additional suggestions we will be grateful for them. We want you to evidence sustained interest in your Journal. Sometimes we feel disposed to temporarily assume a vulnerable attitude upon some subject simply to evoke expressions from our readers—maybe we will if a goodly number fail to proffer their comments and suggestions. It isn't bouquets that we are soliciting—simply your helpful and inspiring co-operation.

Individuals speaking for the first time into the "mike" of a radio station have remarked at the impression of awe that overtook them when they realized that their voice was being carried out upon the vast silences of space and the invisibility of their listening audience. Well, we have time and again experienced the same sensation. We write, or try to. The Journal is mailed and—there is a vast silence. We have requested response—not of praise—but of suggestion. We invite discussion, suggestions and constructive criticism. We want to learn your opinions and desires. That's what our "Open Forum" is for—won't you utilize it?

We trust every member has forwarded his check for 1927 dues to his County Secretary. If you have neglected doing so attend to it today. Your local Secretary will remit your state dues and your state membership certificate will be mailed direct to you. Again do we recommend the displaying of this certificate in your office in order that your patients may perceive that you are affiliated with the recognized medical organization of the state.

A news item reports the death from typhoid fever of a nurse in a city hospital controlled and administered by the local health officer. The

infection was alleged to have been sustained from a bite from a delirious and fighting typhoid patient. A life has been sacrificed because of laxity, for had the health officer insisted that all nurses and employes handling typhoid patients receive typhoid immunizing inoculations the chance is that this nurse would not have contracted typhoid fever. We cite the incident simply to stimulate those who direct hospitals to safe-guard their nurses, internes and orderlies by preventative inoculations.

Haggard, of Tennessee, draws the following observations from his experience with goitre: "When a woman comes complaining of cardiac symptoms, nervousness and weakness, one must show why she has not toxic adenoma. It is rarely necessary to operate on goitre before the age of 20, but if there is an encysted adenoma it should be removed. Parenchymatous enlargement should be left alone and the patient given iodine; if it does not disappear it is probably an adenoma and should be removed. It is a great mistake to give iodine to patients who have had goitre for a long time."

Whoopee—Pepy's Diary is back in "Tonic and Sedatives"—a little docile but amusing. Maybe when the weather becomes real wintry around Chicago and invitations accumulate for medical meetings in localities that boast of summer weather we may be privileged to read and be amused by more of these facetious musings. They are far more entertaining than the "clipped" reproductions that have been cluttering the column. The writer has a vivid imagination and for all that we care he can give it vent without boarding a train.

We repeat in this issue the order blank for the binder and periodical examination blanks. This, we feel, is a compact, convenient outfit that is of value to every doctor. We stress once more your support to this educational movement. Thoroughness is essential. This outfit will materially aid you. Obtain it now by returning the order sheet.

You wonder what you can discuss in our Open Forum? Well here are a few topics we would like to have your opinions upon: "Post-Graduate Instruction," "The Nursing Problem," "District Health Officers," "Our Endowment Foundation," "The Impositions of Insurance Companies." Just open up on these and then we will suggest others.

Attention is called to the editorial in this issue relative to the compilation of a Medical History of Michigan's Profession. This committee, of which Dr. C. B. Burr is Chairman, requires your assistance. Please accord it to the committee.

The Annual Meeting of the Council was held so late in January that we are unable to incorporate the reports and minutes in this issue. They will appear in our March number.

OUR OPEN FORUM

Affording Opportunity for Personal Expression

Editor of The Journal:

I wish to compliment you on the January, 1927 issue of the Journal. This is a star number in makeup with high standard of content.

You are deserving of congratulations and I have no doubt that you will receive many letters concerning this number.

Very truly yours,
W. L. Babcock, M. D.

Editor of The Journal:

Pleased to receive your thanks for the little part I took in the recent Saginaw meeting. To date I have never rendered any expense for such services, and have no intention of doing so at this time. I was very much pleased to have the opportunity of taking part in such an interesting meeting.

If such post-graduate work is to continue allow me to suggest that some paid consultations afforded the essayists at these conferences would be a great honor. It has been my custom for some time past, whenever a dermatological authority visits Detroit, to have some remunerative consultations for him, primarily for the benefit of the patient and secondarily for his gratification. I am suggesting this only in consideration of the younger men who are so willing to take part in these post-graduate conferences.

Very truly yours,
H. R. Varney, M. D.

Editor of The Journal:

How comes that your statistician gives poor little Oscoda County, soon to be the best county in Michigan, credit for such a high rate of maternal mortality? One death in five years does not mean an average of one a year, nor is it likely that 90 per cent of the number of births caused the deaths of each a mother. I do not know of the case quoted in "21" and my competitor was not here that year, but even at that the figures must be wrong. Nearer an average of *one-fifth* than *one* a year. It would not be surprising if under existing conditions our records showed against us, but as long as it is extremely favorable we want all that is coming to us against what may happen to us later on.

Dr. Keifer ought to make a good health officer. It would be difficult to find a better man.

Dr. Little at the head of the University promises well and pleases those who do not like to see institutionalists destroy the American home.

Physicians are pleased to have Dr. Bruce upon the teaching staff.

R. H. Wood, M. D.

Editor of The Journal:

In reply to your letter of December 10, would you kindly advise me to whom I should write to obtain the Directory of the American Medical Association, and if there is a charge for same?

Now in reply to the second paragraph of your letter, I feel that our work is so appreciated by the medical profession, and because of the fact that physical reconstruction is always stressed as the first step in rehabilitation, that they

would appreciate receiving material from time to time, which material of course places them under no obligation whatsoever. We feel that this mailing list of 3,500 would appreciate very much our means of co-operation.

We do feel that we have something at the present time that merits the attention of the profession, and since you state that you will be glad to accept any such thing for publication in the Journal, I wish you would announce the "Rehabilitation Review," the first issue of which is just off the press. This magazine is devoted to the physical reconstruction and employment of the disabled, and represents all national organizations interested in the welfare of disabled persons. I am sending you my own personal copy which you may retain, since I have a duplicate. You will be interested in looking over its table of contents, and noting especially the article on orthopedic treatment of infantile paralysis cases by Dr. Fred H. Albee.

I am also anxious to secure the list of the 3,500 persons to whom the Journal is sent, since I wish to send them free of charge a bulletin which I have just prepared, entitled "The Rehabilitation of Physically Handicapped People in Michigan." This treats the subject very thoroughly and should be in the hands of every practising physician and surgeon. I am quite sure they would welcome it. With very kind regards, I am,

Very truly yours,
Percy Angove,

State Supervisor of Civilian Rehabilitation.

THE PHYSICIAN'S INCOME TAX—1927

The taxpayer who is required to make a return must do so on or before March 15, unless an extension of time for filing the return has been granted. For cause shown, the collector of revenue for the district in which the taxpayer files his return may grant such an extension, on application filed with him by the taxpayer. This application must contain a full recital of the causes for the delay. Failure to make a return may subject the taxpayer to a penalty of 25 per cent of the amount of the tax due.

The normal rate of tax on individual citizens or residents of the United States, under the Revenue Act of 1926, is 1.5 per cent on the first \$4,000 of net income in excess of the exemptions and credits, 3 per cent on the next \$4,000, and 5 per cent on the remainder.

The following discussion covers matters relating specifically to the physician. Full information concerning questions of general interest may be obtained from the official return blank or from the collectors of internal revenue.

WHO MUST FILE RETURNS

1. Returns must be filed by every person having a gross income of \$5,000 or more, regardless of the amount of his net income or his marital status. If the aggregate gross income of husband and wife, living together, was \$5,000 or more, they must file a joint return or separate returns, regardless of the amounts of their joint or individual net incomes.

2. If gross income was less than \$5,000, returns

must be filed (a) by every unmarried person, and by every person married but not living with husband or wife, whose net income was \$1,500 or more, and (b) by every married person, living with husband or wife, whose net income was \$3,500 or more. If the aggregate net income of husband and wife, living together, was \$3,500 or more, each may make a return or both unite in a joint return.

If the marital status of a taxpayer changed during the tax year, the amount of income necessary to bring him within the class required to make returns should be ascertained by inquiry of the local collector of internal revenue.

As a matter of courtesy only, blanks for returns are sent to taxpayers by the collectors of internal revenue, without request. Failure to receive a blank does not excuse any one from making a return; the taxpayer should obtain one from the local collector of internal revenue.

GROSS AND NET INCOMES: WHAT THEY ARE

Gross Income—A physician's gross income is the total amount of money received by him during the year from professional work, regardless of the time when the services were rendered for which the money was paid, plus such money as he has received as profits from investments and speculation, and as compensation and profits from other sources.

Net Income—Certain professional expenses and of carrying on any enterprise in which the physician may be engaged for gain may be subtracted as "deductions" from the gross income, to determine the net income on which the tax is to be paid. An "exemption" is allowed, the amount depending on the taxpayer's material status during the tax year, as stated above. These matters are fully covered in the instructions on the tax return blanks.

Earned Income—In view of the credit of 25 per cent allowed on earned net income, the physician as distinguished from his receipt from other should state accurately the amount of such income sources. Earned income means professional fees, salaries and wages received as compensation for personal services rendered. From this, in the computation of the tax, must be subtracted certain "earned income deductions." The difference is the "earned net income."

The first \$5,000 of an individual's net income from all sources may be claimed, without proof, to be earned net income, whether it was or was not in fact earned within the meaning set forth in the preceding paragraph. Net income in excess of \$5,000 may be claimed as earned if it in fact comes within that category. However, a taxpayer may not claim, as earned, net income in excess of \$20,000.

The conditions relating to the computation of the tax on earned income are too elaborate to be stated here. In case of doubt, physicians should consult collectors of internal revenue.

DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The following statement shows what such deductible expenses are and how they are to be computed:

Office Rent—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes, he may deduct a part of the rental proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in his dwelling house

or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense; to entitle him to such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct amount so charged.

Office Maintenance—Expenditures for office maintenance, as for heating, lighting, telephone service and the services of attendants, are deductible.

Supplies—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs and chemicals. Professional journals may be classified as supplies, and the subscription price deducted. Amounts currently expended for books, furniture and professional instruments and equipment, "the useful life of which is short," may be deducted; but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

Equipment—Equipment comprises property of more or less permanent value. It may ultimately be used up, deteriorate, or become obsolete, but it is not in the ordinary sense of the word "consumed in the using"; rather, it wears out.

Payments for equipment or nonexpendable property for professional use cannot be deducted. As property of this class may be named automobiles, office furniture, medical, surgical and laboratory equipment of permanent value, and instruments and appliances constituting a part of the physician's professional outfit and to be used over a considerable period of time. Books of more or less permanent value are regarded as equipment, and the purchase price is therefore not deductible.

Although payments for equipment or nonexpendable articles cannot be deducted, yet from year to year there may be charged off against them reasonable amounts as depreciation. The amounts so charged off should be sufficient only to cover the lessened value of such property through obsolescence, ordinary wear and tear, or accidental injury. If improvement to offset obsolescence and wear and tear or injury has been made, and deduction for the cost claimed elsewhere in the return, claim should not be made for depreciation.

A hard and fast rule cannot be laid down as to the amount deductible each year as depreciation. Everything depends on the nature and extent of the property and on the use to which it is put. Five per cent a year has been suggested as a fair amount for depreciation or an ordinary medical library. Depreciation on an automobile would obviously be much greater. The proper allowance for depreciation of any property is that amount which should be set aside for the tax year in accordance with a reasonably consistent plan, not necessarily at a uniform rate, whereby the aggregate of the amounts so set aside, plus the salvage value, will at the end of the useful life of the property in the business equal the purchase price of the property or, if purchased before March, 1913, its estimated value as of that date or its original cost, whichever may be the greater. The physician must in good faith use his best judgment and make such allowance for depreciation as the facts justify. Physicians who, from year to year, claim deductions for depreciation on nonexpendable property will do well to make annual inventories, as of January 1, each year.

Medical Dues—Dues paid to societies of a strictly professional character are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are personal expenses and not deductible.

Postgraduate Study—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

Traveling Expenses—Traveling expenses necessary for professional visits to patients is deductible. The Commissioner of Internal Revenue, however, still holds that traveling expenses incident to attendance at meetings of medical societies are merely personal expenses and therefore not deductible. Physicians who have expended money for traveling expenses to attend meetings of medical societies should not make a deduction for the amount so expended, in computing their income taxes under current schedules. They are advised, however, either to make a memorandum on their income tax returns or to file a memorandum with them, showing in detail the amount so expended. Such a memorandum should show that payment of the tax on that amount has been demanded by the Commissioner of Internal Revenue and is made solely by reason of that demand, under protest and under duress. The physician filing such a memorandum should retain a copy of it. In event of any reversal of the commissioner's ruling, physicians who have made such records can more easily substantiate their claims for repayment. A physician who deducts traveling expenses or the expenses of postgraduate study must expect to have such deduction disallowed. He will then be compelled to pay the tax on the disallowance, with interest, or to appeal to the Board of Tax Appeals and possibly to the courts. If he appeals, he will in the end have to abide by the result.

AUTOMOBILES

Payment for an automobile is a payment for permanent equipment, and is not deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeurs' wages, etc.

Deductible loss through depreciation is the actual diminution in value resulting from obsolescence and use, and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is in the possession of the present taxpayer.

If the automobile is used for professional and also for personal purposes—as when used by the physician for recreation, or used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot deduct depreciation or operating expenses; he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood.

What has been said with respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

MISCELLANEOUS

Laboratory Expenses—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of other corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies

and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

Losses by Fire, etc—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense, and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible, however, only to the extent it has not been made good by repair and the cost of repair claimed as a deduction.

Insurance Premiums—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment, and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

Expense in Defending Malpractice Suits—Expenses incurred in the defense of a suit for malpractice are deductible as business expense. Expenses incurred in the defense of a criminal action, however, are not deductible.

Sale of Spectacles—Oculists who furnish spectacles, etc., may charge as income money received from such sales and deduct as an expense the cost of the article sold. Entries on the physician's account books should in such cases show charges for services separate and apart from charges for spectacles, etc.

CIVIC RELATIONS COMMITTEE REPORT

The Committee on Medical and Civic Relations of the Wayne County Medical Society has studied the hospital situation in Wayne County. Dr. Francis Duffield was detailed and kindly undertook to establish the number of hospital beds in Wayne County. The Committee thinks that the report gives a fair estimate of prevailing conditions, although it is well aware of the fact that changes which take place continuously make it possible to furnish only an approximately correct estimate. Compared with the growth of the City of Detroit, the changes are so pitifully small and the increase in the number of hospital beds is so deplorably insufficient that the survey may well be made a basis of earnest consideration and further action. The survey reads as follows:

Thirty-one hospitals in Wayne County with eight or more beds:

1. Eloise Hospital	3010	beds
2. Herman Kiefer Hospital	700	"
3. Providence Hospital	478	"
4. Harper Hospital	460	"
5. Henry Ford Hospital	425	"
6. Northville Sanitarium	402	"
7. Children's Hospital of Michigan	400	"
8. St. Mary's Hospital	325	"
9. Grace Hospital and Annex	400	"
10. St. Joseph's Mercy Hospital	160	"
11. Highland Park General Hospital	154	"
12. Evangelical Deaconess's Hospital	132	"
13. Wm. Booth Memorial Hospital	117	"
14. Detroit Ear, Eye, Nose and Throat Hospital	120	"
15. Woman's Hospital	108	"
16. Delray Industrial Hospital	105	"
17. Wyandotte Osteopathic Hospital	70	"
18. Detroit Osteopathic Hospital	60	"
19. Jefferson Clinic	50	"
20. Michigan Mutual Hospital	50	"

21. Dunbar Memorial Hospital	42	"
22. Florence Crittendon Home	26	"
23. Lincoln Hospital	25	"
24. Mercey Hospital	25	"
25. Detroit Diagnostic Hospital	25	"
26. Cottage Grove Hospital	20	"
27. East Side Hospital	20	"
28. Penn Sanitarium	15	"
29. Grosse Point Hospital	14	"
30. Fenwood Hospital	10	"
31. Marr Maternity Hospital	10	"
32. Forrest Hospital	8	"

7851 beds

1. 300 bed addition soon.
2. 350 beds added in next two years.
3. 196 beds contemplated.
4. 22 beds unopened.
5. 25 to 28 beds opened about January, 1927.
6. This hospital varies from 50 to 70 beds.

St. Joseph's Retreat is not included and perhaps several small hospitals for insane and alcoholism.

From this number of beds we must take 3,025 beds for the Insane, Infirm, Alcohol and Drug Addicts. This leaves 4,826 beds.

Of this number the Tubercular Patient uses 632 (Northville Sanitarium has 402 beds and Herman Kiefer 239).

There remains 9,194 beds and 419 of these are baskets or cribs, thus:

Herman Kiefer Hospital	65
Woman's Hospital	57
St. Mary's Hospital	30
Grace Hospital	46
Childrens Hospital of Michigan	50
Henry Ford Hospital	48
Providence Hospital	60
Wm. Booth Memorial	25
Evangelical Deaconess's Hospital	20
Detroit Osteopathic Hospital	18
	419

This 3,775 beds—

The Acute Contagious Diseases uses up 374 beds, thus:

Herman Kiefer Hospital	340
Highland Park General Hospital	26
Woman's Hospital	8
	374

N. B. Any Hospital taking children must have many beds occupied by isolation cases.

We still have 3,401 beds. We must take 57 beds for so-called Social Service, thus:

Providence Hospital	30
Womans Hospital	27
	57

N. B. The Wm. Booth Memorial and the Florence Crittendon beds are not counted in the above number.

We have remaining 3,344 beds. Of this number 674 are occupied by children from 2 to 12 years, thus:

Providence Hospital	200
Harper Hospital	30
Grace Hospital	21
St. Joseph's Mercy Hospital	13
Woman's Hospital	6
Highland Park General Hospital	14
Wm. Booth Memorial	20
Children's Hospital of Michigan	350
	674

This leaves 2,670 beds.

Obstetrics use 458 beds, thus:

Florence Crittendon Home	20
Herman Kiefer Hospital	65
Delray Hospital	5

Evangelical Deaconess's Hospital	20
Detroit Osteopathic Hospital	18
Harper Hospital	60
Grace Hospital	40
St. Mary's Hospital	30
St. Joseph's Mercy Hospital	25
Woman's Hospital	50
Highland Park General Hospital	20
Grosse Point Hospital	15
Wm. Booth Memorial	12
Providence Hospital	40
Wyandotte General Hospital	10
East Side Hospital	10
Lincoln Hospital	9
Marr Maternity Hospital	10
	458

Of the remaining 2,212 beds some are closed or partly closed to the general practitioner, thus:

Henry Ford Hospital	425
Michigan Mutual Hospital	50
Detroit Diagnostic Hospital	25
Jefferson Clinic	50
	550

This leaves 1,662 hospital beds available to the General Practitioner. There are no beds for the Chronic Heart nor the Kidney cases. In fact except for the Convalescent Home for crippled children started by the Sigma Gamma Society (25 beds) and about an equal number of beds at the Farmington Branch of the Children's Hospital, there are no other beds available for the Chronic Patient nor for the Convalescent Home. The Northville Sanitarium has a Summer Camp which takes two groups of 100 children each for a period of eight weeks. These children are below par in health.

In consideration of the fact that hospital facilities in the city of Detroit have not kept pace with the increase in population, the Committee on Medical and Civic Relations wish to make the following remarks:

1. It is not within the province of the Medical Profession to establish and maintain hospitals.

2. Donations to hospitals, old and new, and endowments constitute one of the most useful and practical benevolent acts.

3. All people are interested in hospitals. They are necessary and their lack is a grave condition. It results in unnecessary cost of life.

4. All of us should co-operate to ameliorate. We therefore feel that:

1. The existing hospitals should be enlarged.

2. New hospitals should be erected in districts which need them.

3. Emergency stations should be created in outlying districts so that first aid can be given in accident cases, and so that people injured seriously need not be transported many miles until they are helped.

5. The lack of any provision for the care of Chronic Heart and Kidney cases, which are invariably repeaters, causes a loss of untold sums of money and constitutes a great drain on the economic resources of the city.

We suggest that the Board of Commerce appoint a committee, of which no member shall be a trustee of any existing hospital nor a physician, to take steps toward ameliorating the hospital bed situation.

The Committee has been informed that the Detroit Board of Commerce will take up the matter.

Dr. Emil Amberg, Chairman.

Dr. Francis Duffield, Dr. H. Wellington Yates,
Dr. A. R. Hackett, Dr. H. H. Bemis, Sec'y.

NEWS AND ANNOUNCEMENTS

Thereby Forming Historical Records

Dr. Frank Bohn, of the 11th, assumed his seat in Congress with the present session.

Dr. Fred M. Huntley was named Chief of Staff of the Sparrow Hospital, Lansing.

Dr. Earl B. Ritchie has resigned as City physician of Jackson.

Dr. Guy L. Keifer will assume his duties as State Commissioner of Health on February 1st.

Dr. D. Chandler and Miss Josephine Leys of Grand Rapids, were married on January 17.

Dr. Byron E. Briggs has assumed his duties as superintendent of the Hurley Hospital, Flint.

The marriage of Miss Leita Cooley and Dr. Milton Shaw of Lansing, was announced December 21st.

Doctors Dretzka and Hirschman, of Detroit, have been appointed to the State Health Advisory Commission.

Dr. C. C. Sturgis, of Boston, has been appointed as Professor of Medicine in the University Medical Department under Dr. Bruce, who continues as the head of the Department of Internal Medicine.

Re-affirming a friendship and comradeship, Dr. W. T. Dodge entertained at Bridge on Jan. 27. Drs. C. B. Burr of Flint, George L. LeFevre of Muskegon and F. C. Warnshuis of Grand Rapids.

DEATHS

Dr. Herbert M. Rich died at Detroit, December 16, 1926.

Dr. Rich was born at Middleville, Mich., February 12, 1874. He entered the Michigan Agricultural College in 1887, going from there to the University of Michigan where he received the degree of Bachelor of Arts in 1897. His medical training he received at the same school, being made a Doctor of Medicine in 1911. Dr. Rich served an internship in the Boston City Hospital, which he followed with Post-Graduate

study in London, Berlin and Vienna. He began practice in Detroit in 1904, specializing in internal medicine. His attention later was turned to the field of tuberculosis in the study of which disease he remained active.

Dr. Rich was a member of the American Medical Association, Michigan State Medical Society, which later he rendered valuable service as chairman of the Library Committee. He was also a member of the American College of Physicians, the American Climatologists Society and a charter member of the Detroit Tuberculosis Society, serving this society at various times as president, vice president and secretary. He was one of the founders of the Detroit Tuberculosis Sanatorium, where he acted as Attending Physician since 1911.

Commissioner Charles S. Kennedy requested the privilege of the floor, which was granted by the President.

Commissioner Kennedy then moved that the Library Commissioners register their deep sense of loss in the death of Dr. Herbert M. Rich.

Eminent in his profession and honored with responsibilities in the promotion of the standards in medical education and practice, Dr. Rich found time to devote his experience and energy to the development of library service within the field of that science to which he made so many distinguished contributions. As Chairman of the Advisory Library Committee of the Wayne County Medical Society he gave generously of his counsel in clarifying the scope and high usefulness of the Medical Science Department of the Public Library. Largely through his quietly persevering efforts a definite policy and firm foundation have been laid down, insuring for this medical library a fruitful growth and the good will of the medical profession during years to come.

For his genial and stimulating association in our common endeavors, for his high minded efforts to realize the worthy aspirations of our city, we herewith inscribe his name in grateful and honored memory.

So ordered.

As we go to press, newspapers advise us of the deaths of:

J. Everette King, M. D., Detroit, on January 22nd. Dr. King, as Speaker, presided over the last session of our House of Delegates.

Francis Duffield, M. D., Detroit. Died during the week of January 16th, from an acute attack of heart disease.

Extended biographies will appear in our March issue.

COUNTY SOCIETY ACTIVITY

Revealing Achievements and Recording Service

To County Officers:

The following reports attest to the activity of county units. They are splendid and evidence a true spirit of organizational activity. It is by reason of this type of work that our State Society is prosperous, live and achieving. The more intense your local efforts are the further will we progress. We re-iterate again that it is only by planned effort and sustained work that interest of members is maintained. This is the definite responsibility of officers and the obligation that you accept upon assuming office. Therefor we urge that you give much thought and effort to the arrangement of your programs so as to maintain the interest of your members. Then, do not rest content after having provided for your scientific program. Tackle your local interests of your members. Interest the public in your work and promote educational meetings.

Our March issue will contain the announcement of new and expanding undertakings. Right now we are desirous of witnessing a state-wide evidence of County Society enthusiasm that will enable each member to play an active role.

OAKLAND COUNTY

Oakland County Medical Society finished a fairly successful year at its Annual Meeting December 14. Some progress was made toward carrying out the minimum program. The Society invited the Oakland County Bar Association to a joint meeting in April, which was the first of its kind to be held in the county, and in July the Bar Association entertained the Medical Society at the Elizabeth Lake Golf Club. The better understanding and good feeling growing out of these meetings bids fair to be very helpful and enduring.

Two members of the Society have died during the year: Dr. Ellsworth Orton and Dr. Robert Le Baron, Pontiac. Dr. Le Baron had been in practice in Pontiac since August, 1864, and active in medical affairs from that time until his death.

Election of officers for 1927 resulted as follows: President, Dr. Nathan B. Colvin, reelected; Vice President, Dr. Frank Mercer; Secretary, Dr. Fred Baker; Treasurer, Dr. Isaac C. Prevette, reelected. The Board of Directors is composed of Dr. R. Y. Ferguson, Dr. D. G. Costell and Dr. Leon Cobb. The delegates to the State Society are: Dr. Frank Mercer and Dr. Robert Baker. Dr. C. J. Sutherland, of Clarkston, and Dr. A. V. Murtha are alternates.

The Legislative Committee previously appointed

holds over and is composed as follows: Chairman, Dr. N. T. Shaw, Birmingham; Dr. E. V. Howlett, Pontiac, Mich.; Dr. C. J. Sutherland, Clarkston, Mich.; Dr. Fred Baker, Pontiac, Mich., and Dr. Frank Mercer, Pontiac, Mich.

Dr. R. Y. Ferguson continues the Society's representative to the Medical Defense Committee.

Dr. Howard H. Barker was elected to membership by transfer from Washtenaw County. Dr. Bertil T. Larson by transfer from Gogebic County. Dr. H. C. Crissman, 172 W. Nine Mile Road, Ferndale, Mich.; Dr. C. T. Ekelund, 24½ W. Huron Street, Pontiac, Mich.; Dr. Francis J. Bloise, 1st National Bank, Pontiac, Mich., were elected members.

New members elected to the Society during the year include:

Dr. Ruth E. Wagner, Royal Oak, Mich.; Dr. E. A. Martindale, Walled Lake, Mich.; Dr. J. P. McConkie, Birmingham, Mich.; Dr. D. F. Hoyt, Pontiac, Mich.; Dr. Hubert M. Heitsch, Pontiac, Mich.; Dr. Karl Quinn, Pontiac, Mich.; Dr. Alexander Borland, Pontiac, Mich.; Dr. Herbert E. Moore, Birmingham, Mich.

Frank S. Bachelder, Secretary.

This is to inform you that the annual meeting of the Oakland County Medical Society was held at the Board of Commerce, Pontiac, Mich., December 15, 1926. Twenty-three members were present and the following officers were elected for the year of 1927.

President, Dr. Colvin, for the third successive year; Vice-President, Dr. Frank Mercer; Board of Directors, Dr. R. Y. Ferguson, Dr. D. G. Costell and Dr. L. J. Cobb; Treasurer, Dr. I. C. Prevette, and Secretary, Dr. F. A. Baker.

Dr. Colvin was presented with a fountain pen and pencil as recognition of his services for the past two years.

Applications for members in the society were received from Drs. H. C. Crissman, Ferndale; Bertil T. Larson, Pontiac; C. T. Ekelund, Pontiac; H. B. Barker, Pontiac, and Francis Bloise.

Yours very truly,

Frederick A. Baker, Secretary.

HOUGHTON COUNTY

The Houghton County Medical Society held its regular monthly meeting at the Scott Hotel, Hancock, Tuesday, January 4 at 8:30 p. m. after reading of the minutes and allowing of bills the Secretary-Treasurer read his financial report for the year. An auditing committee of Drs. La Bine, Stern and Dodge reported the report, O. K.

During the year 1926, we had a membership of 40, with 100 per cent dues paid.

New members received, Drs. Costeo, McNab, Oler and Holm. Members removed, Drs. Oler and Bicknell.

Deaths—Dr. H. N. T. Nichols.

Total attendance during year 160, for 10 meetings average of 16.

During the year we had the Post Graduate Conference attended by 25 doctors. Health talk at Houghton High School by Dr. A. F. Fischer on Physical Examinations. Picnic at Dr. Harkness cottage. For the past three years as Secretary I have led the state in reports submitted to State Journal.

The application of Dr. G. M. Waldie was received and referred to the Board of Censors.

Dr. G. C. Stewart read a paper on "Ultra-Violet Lamp Therapy."

Dr. Stewart covered the subject in a general way, having used an Alpine Sun Lamp for the past two years in his practice.

Discussion of the subject by Dr. G. M. Waldie full time Tuberculosis Physician at the Houghton County Sanatorium. Dr. Alfred La Bine, County Physician. Dr. W. Scott, Dr. H. M. Joy, Dr. A. C. Messenger, and several others. The fact that several lamps have been purchased here in Houghton County, as well as several Diathermy outfits, shows that Physical Therapy is becoming active here as elsewhere.

The election of officers followed and is as follows: President, Dr. M. D. Roberts, Hancock, Mich.; Vice-President, Dr. W. T. King, Calumet, Mich.; Secretary and Treasurer, Dr. A. B. McNab, Baltic, Mich.; Censor for three years, Dr. W. P. Scott, Houghton, Mich.; Delegate to State Meeting, Dr. A. C. Roche, Calumet, Mich.; Alternate to State Meeting, Dr. M. D. Roberts, Hancock, Mich.

Respectfully,

G. C. Stewart, M. D.

Election of officers, Houghton County Medical Society, Hotel Scott, Hancock, Mich., Tuesday evening, January 4, 1927.

President, Dr. M. D. Roberts, Hancock; Vice-President, Dr. W. T. King, Ameek; Secretary and Treasurer, Dr. Alex B. MacNab, Baltic; Member of Board of Censors for three years, Dr. W. P. Scott, Houghton; Delegate to State Medical Society Meeting, at Mackinac Island, June 16 to 18, 1927, Dr. A. C. Roche, Calumet; Alternate Delegate, Dr. M. D. Roberts, Hancock; Members of Legislative Committee, Dr. J. W. Moore, Chairman, Houghton; Dr. A. D. Aldrich, Houghton; Dr. A. F. Fischer, Hancock; Dr. R. B. Harkness, Houghton, and Dr. W. H. Dodge, Houghton.

An excellent paper upon the use of the Ultra-Violet Lamp was presented by Dr. G. C. Stewart, and was discussed by all members present.

Fourteen members were present and two visitors, Dr. George W. T. Walding and Dr. Clarence W. Messenger.

Alex B. MacNab, Secretary.

SAINT CLAIR COUNTY

The Annual Meeting of Saint Clair County Medical Society was held at the Hotel Harrington, Thursday, Dec. 30, 1926. After the usual dinner and social hour the meeting was called to order at 7:30 p. m. by Vice President W. W. Ryerson.

The following members were present: Drs. Heavenrich, McColl, Waters, Clancy, Patterson, MacKenzie, Treadgold, Smith, La Rue, Ryerson, Kesi, Callery, Burley, Vroman, Bowden and Attridge.

The minutes of the meetings of Nov. 18 and Dec. 9, 1926, read and approved. The minutes

of the meeting of the Public Health Committee of the Society held Dec. 17, 1926 read and approved. A communication from the Port Huron Times-Herald requesting the Society to endorse a plan of educational advertising read and referred to a committee consisting of Drs. Attridge, Burley and MacKenzie, with direction that committee investigate the value of the proposition and report at the next meeting of the Society. A letter from President J. J. Moffet was read by the Secretary. Dr. Moffet thanked the members of the Society for their co-operation during the year and suggested that the Public Health Committee continue to be an active adjunct to the Society, making the statement that the work of this committee deserved unanimous support. The letter concluded with an expression of thanks to the individual members of the Society who gave Dr. Moffet their care during his recent illness. Upon motion adopted by the Society, the letter of Dr. Moffet was ordered incorporated in the records of the organization. A letter from the American Medical Association relative to establishment of home or homes for indigent physicians, with questionnaire for information of that organization upon that subject, was read and the Secretary was directed to reply thereto. The application of Dr. C. F. Thomas for membership in the Society was read and a committee of three, Drs. Clancy, McColl and Heavenrich appointed to take action thereon.

The Society then proceeded to the election of the following officers for the year of 1927:

Dr. W. W. Ryerson, President; Dr. G. Reginald Smith, Vice-President; Dr. George M. Kesi, Secretary-Treasurer; Dr. A. L. Callery, Delegate to the State Society, and Dr. D. W. Patterson, Alternate Delegate.

Following the election short addresses were made by Drs. Ryerson and Smith. It was decided by motion adopted to hold the Annual Banquet of the Society on Thursday evening, Jan. 20, 1927 at the Hotel Harrington, Port Huron, Mich. Dr. Ryerson then appointed a committee of Drs. Heavenrich and MacKenzie to prepare plans for and have supervision of the Banquet Program.

Meeting adjourned at 8:50 p. m.

Respectfully,

George M. Kesi, Secretary-Treasurer.

MUSKEGON COUNTY

December meeting of Muskegon County Medical Society was held at the County Tuberculosis Sanatorium as guests of the Board of Directors.

After a splendid chicken dinner Dr. Bartlett, the new Director of the Sanatorium, gave out the policies of the institution for the coming year.

Application of Dr. Robert Douglas was read and he was elected to membership in the Society. Also Dr. A. G. Burnell was admitted on transfer.

Letter from Dr. R. L. Matteo, of Santa Rosa, California, was read, requesting transfer to Sonoma County, California Medical Society. This was also granted.

President Dr. Thornton brought to the attention of the Society the number of meetings of different organizations taking our time and suggested we have just one meeting each month. This was approved unanimously.

Officers elected for 1927: President, Dr. E. L. Kniskern; Vice President, Dr. C. J. Bloom; Secretary-Treasurer, Dr. H. B. Loughery; Delegate, Dr. F. W. Garber, Sr.; Alternate, Dr. A. F. Harrington.

ton; Medico-Legal Adviser, Dr. Geo. LeFevre; Board of Directors, Doctors A. B. Poppen, R. F. Busard and E. S. Thornton.

Regular January meeting held at Occidental Hotel with 31 members present, including Dr. Burnell and Dr. Wilke of Whitehall and Montague, and Dr. Bradbury who has taken over the practice of Dr. Wood.

Following the dinner Dr. J. B. Youmans of Ann Arbor gave a very interesting lecture on the Clinical Forms of Arthritis including the use of a new drug ammonium-iodory-benzoate in these conditions.

Discussed by Drs. LeFevre, Garber and Harrington.

Treasurer's report for 1926 read and approved.

The present membership of our society is now 58.

Regular meetings will be held on the first Friday of each month.

H. B. Loughery, Secretary.

ALPENA COUNTY

The regular Annual Meeting of the Alpena Medical Society was held December 16th. Dr. F. J. O'Donnell was host to the profession at a dinner served at his home on State Avenue. Dr. V. L. Tupper was the guest of the Society on this occasion. After an enjoyable social hour the meeting was adjourned till eight p. m. at Dr. S. T. Bell's office.

The report of the Secretary shows that the minimum program adopted by the State Medical Society for the year 1926 has been carried out in Alpena. There were held during the year 12 regular meetings on the third Thursday of each month. These regular meetings had an average attendance of seventeen. There were two special meetings held with an average attendance of eight. The Post-Graduate Medical Conference was held in Alpena, May 5th, with a total enrollment of 24 physicians and 24 guests. The Society held reciprocal meetings with the Chipewawa, Genesee and Bay County Medical Societies. The Society has entertained the ministers of the city who supplied the program one occasion and entertained the entire Rotary Club on the occasion of the Post-Graduate Medical Conference. Two public lectures on health topics have been delivered during the year. Total number of members reported for the year was 20.

The following were elected officers for the year 1927: President, Dr. F. J. O'Donnell; Vice President, S. T. Bell; Secretary-Treasurer, William Newton; Delegate to the State Medical Society Meeting, C. M. Williams; Alternate, William Newton; Legal Representative, E. L. Foley.

C. M. Williams, Secretary.

SHIAWASSEE COUNTY

The January meeting of Shiawassee County Medical Society was held at Memorial Hospital, Owosso, on January 4 at 7:30 p. m.

Dr. H. A. Hume gave a very instructive paper on Pyelitis which was discussed by G. L. G.

Cramer and Dr. F. A. Watts, after which some general discussion followed.

Dr. LaMotte Bates gave a paper on Skeletal vs. Adhesion traction in fractures of the Femur which was discussed by Dr. W. F. Weinkauff and Dr. A. L. Arnold, Jr. This method was afterward demonstrated in the operating room by Drs. Arnold and Bates on a fracture of the femur in a boy 10 years of age.

A light lunch was served by the hospital management after the meeting.

W. E. Ward, Secretary-Treasurer.

GRATIOT-ISABELLA-CLARE CO.

The annual banquet and business meeting of the G. I. C. was held in the Wright House in Alma, Thursday, December 16, 1924.

At 7:30 nine couples sat down to a very prettily decorated table in the dining room. After all the good things were disposed of a short business session was held, at which Dr. A. E. Huebner was elected to membership and the following officers were elected for 1927: H. F. Kilborn, president; E. L. Street, Vice-President, and E. M. Highfield, Secretary and Treasurer. All then moved to the parlor, where four tables of bridge were played, Mrs. Street winning the prize.

E. M. Highfield, Secretary.

OCEANA COUNTY

On December 16, 1926, the Oceana County Medical Society held its annual meeting at Hart, Mich., and elected the following officers for 1927. President: Dr. J. D. Buskirk, Shelby, Mich.; Vice President, Dr. J. H. Nicholson, Hart, Mich.; Secretary-Treasurer, Dr. F. A. Reetz, Shelby, Mich.

Fred A. Reetz, Secretary.

DETROIT OTO-LARYNGOLOGICAL SOCIETY

The next meeting of the Detroit Oto-Laryngological Society will be held Wednesday, February 16, in the new club rooms of the Wayne County Medical Society in the Maccabees Building. These meetings are open to all members of the State Society.

Dr. Ross H. Skillern of Philadelphia, President of the American Academy of Ophthalmology and Oto-Laryngology, will be speaker at this meeting.

Dr. Skillern is known all over the world for his work on the accessory sinuses of the nose. Many physicians throughout the state will want to hear him.

A testimonial dinner, for which you should make reservation early, will be given the doctor at 6:30 that evening.

Officers for the year 1927: President, Dr. Frank L. Ryerson; Vice President, Dr. Emil Amberg; Secretary-Treasurer, Dr. Wm. Fowler.

Wm. Foyler, Secretary.

BOOK REVIEWS AND MISCELLANY

Offering Suggestions and Recommendations

THE NORMAL CHILD—B. Sacks, M. D. Price \$1.50, Paul B. Hoeber, Inc. 76 56th street, New York city.

This is a manual of suggestions for patients, teachers and physicians. It also gives consideration of the influence of psychoanalysis. It is an outspoken, sane, plainly written presentation of facts in understandable terms.

TRANSFUSION OF BLOOD—H. M. Feinblott, M. D. Cloth 137 pp. The MacMillan Co., New York.

A quite satisfactory, simple and detailed discussion of blood transfusion. It outlines procedure and details precautions.

INTERNATIONAL CLINICS—Vol. IV. 36th Series, 1926. J. B. Lippincott Co.

Consistently maintaining the standard of these Clinics. The usual varied and comprehensive discussion of medical and surgical subjects.

THE ITINERARY OF A BREAKFAST—John Harvey Kellogg, M. D. 12 mo. Cloth. 202 pages. Illustrated. \$1.75, net. Funk & Wagnalls Co., New York.

Some of the chapter-headings will give you an inkling of the interesting information which you are given: "The Food Tube," "The Five Food Laboratories," "The Digestive Time Table," "Diagram of the Food Tube," "The Ten Gates," "The Food Blocade in the Colon," "The Crippled Colon," "The Intestinal Flora—What It Is and Why It Must be Changed," "How to Change the Intestinal Flora," etc. In addition, diets are given for crippled colons and colitis and suggestions are made for the relief of other ills.

In this new edition all of the important changes which have resulted from recent research have been carefully noted and explained so that the volume as it now stands is a guide greater than ever to the marvelous bodily functions which have to do with the food we eat.

The illustrations in colors as well as those in black and white graphically present the important points which the author so clearly and entertainingly brings out and especially the progress of a meal through the body—a breakfast which the author takes as an example.

AMERICAN MEDICAL ASSOCIATION

Undoubtedly many members of the State Medical Society and their families are already making plans to attend next Annual Meeting of the American Medical Society to be held in Washington, D. C., May 16-20. That a maximum of travel comfort may be enjoyed enroute, the Pennsylvania Railroad contemplates operating extra cars for exclusive use of members from the state on the "Red Arrow," the only De Luxe All Pullman train, carrying club lounge car and observation car also open section compartment drawing room, sleeping cars and dining car serving the finest meals, between Detroit and Washington, leaving at 3:55 p. m. daily, arriving Washington 8:50 the following morning or, if sufficient number of reservations are secured to so warrant, special train to be an exact counterpart of the "Red Arrow" will be operated. If, for any reason, members find the above schedule inconvenient, through Pullman equipment is also carried in train leav-

ing Detroit 11 p. m., arriving Washington next evening at 7:05.

Reduced rate of fare and one-half for the round trip on the certificate plan has been authorized for the meeting. In order to obtain this reduced fare, members are cautioned to obtain a certificate account this meeting from railroad ticket agent at time of purchasing ticket. One way tickets will be sold and certificates issued from points in the state from May 12th to and including May 18th. Certificates will be validated by Secretary of the American Medical Association in Washington, May 16th to 20th, and will be honored for purchase of return ticket at half fare via same route as used on the going trip, to and including May 24, 1927.

The one way fares from a few of the larger cities to Washington are as follows:

Detroit	\$21.55
Port Huron	24.01
Flint	23.30
Saginaw	24.50
Lansing	23.30
Grand Rapids	25.45
Muskegon	26.89

Members desiring to remain longer in the east than authorized by certificate plan arrangement should consult local ticket agent as to reduced summer tourist fares to Atlantic Coast Resorts.

The one way Pullman fares from Detroit to Washington are as follows:

Lower berth \$6.38, upper \$5.10, compartment \$18.00, drawing room \$22.50.

THE JOURNAL

IS

YOUR FORUM—

WE INVITE YOU

TO UTILIZE

IT FOR THE

EXPRESSION OF

YOUR VIEWS

ON

MEDICAL SUBJECTS

INVITATION

You are personally and cordially invited to be present at and to take part in the discussions of the American Congress on Medical Education, Medical Licensure and Hospitals on February 14, 15 and 16, 1927, in the Red Lacquer Room, Palmer House at State and Monroe streets, Chicago. The program will be as follows:

PROGRAM

First Day, Monday, February 14, 1927

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Morning Session, 9:30 O'clock

Need of Teaching Medical Ethics,
The Chairman, Dr. Arthur Dean Bevan,
Chicago.

The Trend of Medical Education,
Dr. Charles F. Martin, dean of McGill
University Faculty of Medicine, Mont-
real, Quebec.

Altering the Medical Curriculum,
Dr. Ray Lyman Wilbur, President of
Stanford University, California.

Afternoon Session, 2:00 O'Clock

Teaching of Clinical Work to the Undergraduate,
Dr. Evarts Graham, Bixby Professor of
Surgery, Washington University
School of Medicine, St. Louis.

Medical Education for the General Practitioner,
Dr. William J. Mayo, Rochester, Minn.

Place of Preventive Medicine in the Medical
Curriculum,
Dr. Waller S. Leathers, Professor of
Preventive Medicine, Vanderbilt Uni-
versity School of Medicine, Nashville,
Tenn.

Preliminary Report of the Commission on Medi-
cal Education,
Dr. Willard C. Rappleye, Director of
Study, New Haven, Conn.

Second Day, Tuesday, February 15, 1927

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Morning Session, 9:30 O'clock

A Hospital Department of Physical Therapy,
Dr. Frank B. Granger, Physician-in-
Chief for Physical Therapy, Boston
City Hospital, Boston.

The Duty of the Hospital Staff to the Intern,
Dr. George E. Follansbee, Chief-of-Staff,
St. Alexis Hospital, Cleveland.

The Hospital Function in Graduate Medical Edu-
cation,
Dr. N. P. Colwell, Secretary of the
Council on Medical Education and Hos-
pitals, Chicago.

Afternoon Session, 2:00 O'clock

Teaching Value of Post-Graduate Clinics and
Programs,

Dr. Walter L. Bierring, Secretary-Treas-
urer, Federation of State Medical
Boards of the United States, Des
Moines, Iowa.

Taking Medical Education to the Practitioner,
Dr. Charles A. Gordon, Chairman of the
Committee on Public Health and Med-
ical Education of the Medical Society
of the State of New York, Brooklyn.

Graduate Medical Education in Europe in 1926,
Dr. Louis B. Dilson, Director of the Mayo
Foundation of Medical Education and
Research, Rochester, Minn.

Third Day, Wednesday, February 16, 1927

FEDERATION OF STATE MEDICAL BOARDS

Morning Session, 9:30 O'clock

Licensure Requirements in Relation to the Teach-
ing of Preventive Medicine,

Dr. Waller S. Leathers, Professor of Pre-
ventive Medicine, Vanderbilt Univer-
sity School of Medicine, Nashville,
Tenn.

Relation of the Quarter System to Medical
Licensure,

Dr. N. P. Colwell, Secretary of the Coun-
cil on Medical Education and Hos-
pitals, Chicago.

Basic Science Law,

Dr. Edward Evans, Chief-of-Staff, St.
Francis Hospital, La Crosse, Wis.

Report of the First Year's Study by the New
Commission on Medical Education,

Dr. Willard C. Rappleye, Director of
Study, New Haven, Conn.

Afternoon Session, 2:00 O'clock

Practical Administration of the Enforcement of
the Law Against Illegal Practitioners,

Dr. Harold Rypins, Secretary of the
Board of Medical Examiners of the
State of New York, Albany, N. Y.

Safeguarding State Board Records,

Dr. Charles B. Pinkham, Secretary of the
California Board of Medical Examin-
ers, Sacramento, Calif.

Enforcement of a Medical Practice Act,

Dr. T. J. Crowe, Secretary of the Texas
Board of Medical Examiners, Dallas,
Texas.

Reciprocity versus Interstate Endorsement,

Dr. G. M. Williamson, Secretary of the
North Dakota Board of Medical Exam-
iners, Grand Forks, N. Dak.

OFFICERS

THE COUNCIL ON MEDICAL EDUCATION AND
HOSPITALS OF THE AMERICAN MEDICAL
ASSOCIATION

Arthur Dean Bevan, Chairman.....	Chicago
Walter F. Donaldson.....	Pittsburgh
Merritte W. Ireland.....	Washington
William Pepper.....	Philadelphia
Samuel W. Welch.....	Montgomery, Ala.
Ray Lyman Wilbur.....	Stanford University
Louis B. Wilson.....	Rochester, Minn.
N. P. Colwell, Secretary.....	Chicago

THE FEDERATION OF STATE MEDICAL BOARDS
OF THE UNITED STATES

Byron U. Richards, President-Elect.....	Pawtucket
Samuel W. Welch, President.....	Montgomery
Thomas J. Crowe, Vice President.....	Dallas
Walter L. Bierring, Secy.-Treas.	Des Moines